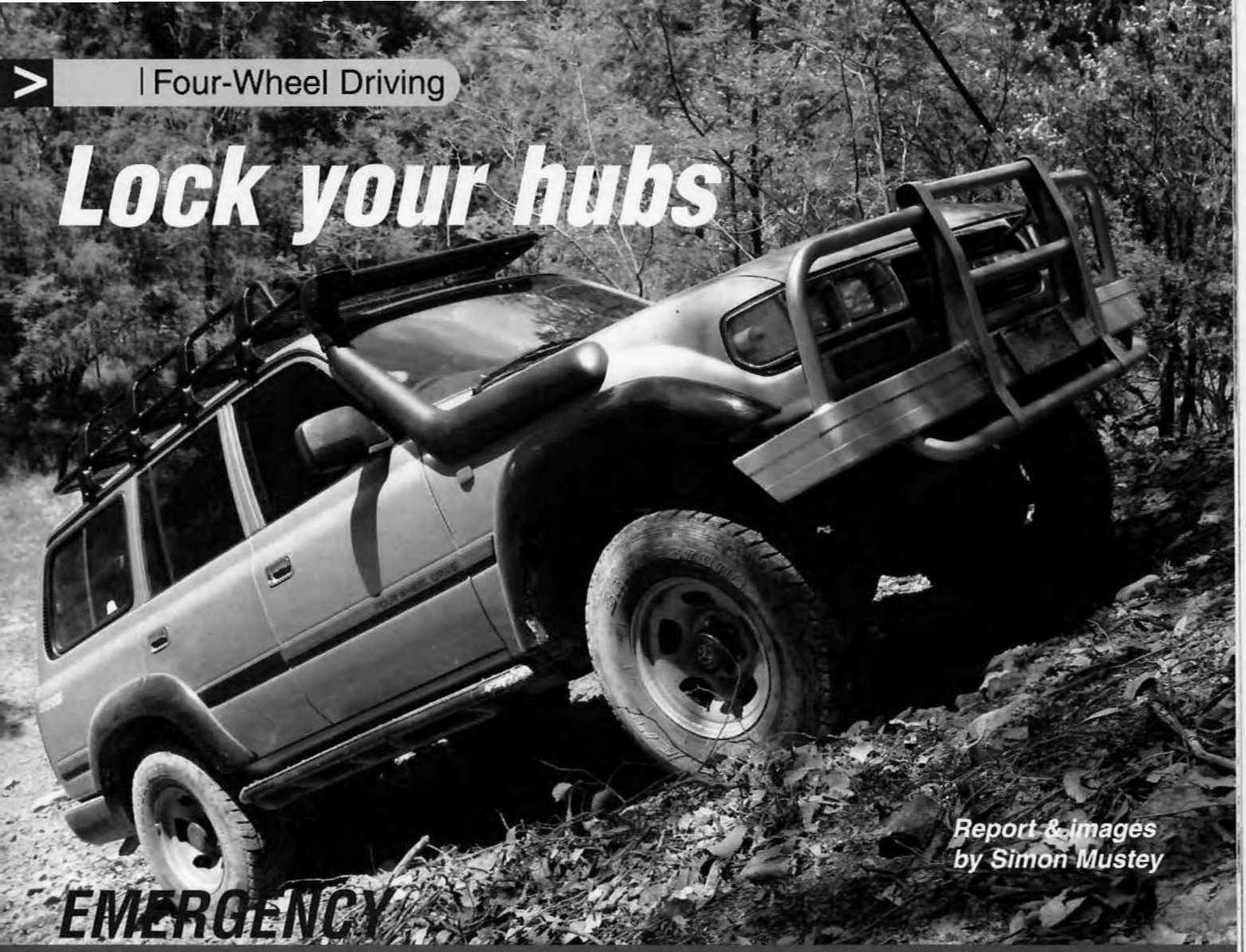
Lock your hubs



Report & images by Simon Mustey

EMERGENCY STOPS ON STEEP HILLS IN AN AUTOMATIC TRANSMISSION VEHICLE

What's a steep hill? We're all familiar with a shopping centre car park ramp, whether it's Chadstone or Highpoint, that's not a steep hill, you don't use any special driving techniques going to Coles, so why would you when driving up the same gradient in the bush? When you stand at the base of the hill and your neck cracks as you look up toward the top and you can feel the need for an involuntary "nature break" coming on, that's a steep hill!

So let's look at a failed climb driving uphill in an automatic transmission equipped vehicle.

Here's the procedure

Stopping

1. Footbrake applied progressively with left foot
2. Then held hard on
3. Apply park brake firmly, leave gear as is

When Stopped

1. Check direction of wheels
2. Select reverse, keeping foot on brake
3. Check clear behind

Restart

1. Release park brake (maintain foot-brake)
2. Release footbrake pressure till about to move



3. Increase revs till vehicle moves slowly.

Let's not forget when driving in adverse terrain, place your hands on the steering wheel at quarter to three with your thumbs out, at least one hand should be on the wheel at all times.

Automatic transmission equipped vehicles on hills are easier than manuals, though you do have to multi-task, brake and accelerate simultaneously (so it's easier for the ladies as us blokes can't multi-task....)

If your anything like me, when you get stuck on a hill, the last thing you think about is using your left foot to hit the brake. Don't worry because I've got a contingency plan to work around it for you. The process is heading up a steep hill and you need to stop; simply put your foot on the brake (preferably your left foot) then apply the park brake firmly. Leave in gear as is and don't turn the engine off.

While stopped check the direction of your front wheels. Again I can't stress how important this step is, you need to know where they're pointing. If you can't see, call someone over the radio or get your passenger out to help. Especially when stuck in slippery terrain such as snow or mud, it's not unusual to have no idea where your wheels are pointing. Now's the time to select reverse gear, it's also the opportune time to swap feet from right to left if you braked with your right foot in step 1 of stopping. Just shuffle your right foot off the brake pedal while shuffling your left foot on.

The final step while stopped is to check and clear behind. We all go 4wding with mates as we should and those mates will revel in the fact that they can take your photo while stuck and message that photo to your loved ones at home before you can even select reverse!

Now it's time to start to head back down the hill. Firstly release the park brake. Secondly you'll need to decrease the pedal pressure of your left foot on the brake, until your car makes a groan or a shudder but still remains stationary on the hill. You'll now need to lock your left ankle in that position right to the bottom of the hill. Now you increase the revs until the car starts to move. You're aiming for a slow walking pace. You'll need to hear the engine working while you're driving backward. Remember the



shopping centre car park ramp I spoke about earlier? You'll need to hear the engine working, just as you would if you were driving up the shopping centre car park ramp. Continue driving the car right to the bottom of the hill. If you need to stop while heading backward down the steep slope, simply take your foot of the accelerator and you will come to a gently progressive stop without inducing a skid.

What's the idea behind this new fang dangled "driving through the brakes" technique you ask? Driving through the brakes forces drive to each wheel. Your centre differential will of course be locked (or equivalent in some cars) so the drive is sent 50:50 to both the front and rear differentials.

With an open (conventional) differential the torque is split 50:50 across both wheels at all times, minus some small frictional losses. So by providing an even amount of braking to each wheel on the axle, hence an even amount of resistance to each side of the differential and consequently torque. You are able to virtually eliminate the chance of one wheel spinning while the other remains stationary on the same axle.

You'll also be able to go a lot slower, which is an advantage in rocky country, as you'll minimise how much your suspension compresses and maximise your clearance. It's additionally a great technique for lowering yourself down a rock step.

What goes up must come down, downhill in an automatic transmission equipped vehicle.

Driving an auto downhill (driving through the brakes)

Stopping

1. Take foot off accelerator
2. Vehicle will stop if it is being correctly driven through the brakes
3. Apply park brake firmly

When Stopped

1. Left foot on brake to hold vehicle
2. Put transmission in first gear
3. Check clear ahead & direction of wheels

Restart

1. Release park brake.
2. Release footbrake pressure till about to move
3. Increase revs till vehicle moves slowly.

The above technique assumes you are driving downhill using the driving through the brakes technique. You're left foot braking and simultaneously accelerating heading down a steep hill. All you need to do is progressively remove your right foot from the accelerator and if the car is being correctly driven through the brakes will come to an even progressive stop without inducing a slide. Don't forget to engage the park brake.

Now you are stopped, you can increase the brake pedal pressure. If you're not already in first, this is the time to shift into low gear. Just as before you'll need to know where your wheels are pointing and clear the photographers from your path ahead.

Once the obstruction has been moved you're ready to progress down the hill. Disengage the park brake, then just as before, release the brake pedal pressure until the car is about ready to move, you'll need to listen for the groan or shudder your particular car makes. Start accelerating using the right foot and again you're shooting for a slow walking pace. Listen for the engine working, like your accelerating up the shopping centre car park ramp. Continue driving through the brakes until you're through the steep section.

Parking on a hill

1. Apply both footbrake and park brake
2. Move gear select to "N" Neutral
3. Cautiously release footbrake
4. The vehicle may move slightly as it comes to rest on the park brake.
5. Move gear select to "P" PARK
6. Engine off
7. Chock wheels

Sometimes you'll need to park on a slope and this requires some special procedures in an automatic transmission equipped vehicle

You'll need to apply both the footbrake and park brake. Once you've secured the vehicle, move the gear selector to the neutral "N" position. Now cautiously release the foot brake. At this point the vehicle will be resting on the park brake. At this point you can shift the gear selector to the park position. Turn the engine off and get one of your passengers to chock the wheels.

The above procedure is a great habit to get into even when you're parking down the local shops, that way when you're off road you're able to park the vehicle correctly without thinking about it.

The reason you don't just pop the transmission into park on a steep hill is the way in which the transmission's park brake works. There is a component inside your transmission called a parking pawl that when engaged under tension, (as would happen if you come to rest on the park brake on a steep hill) locks up, and will refuse to come out of park without winching or pulling the whole car to remove the tension off the pawl arrangement.

In the next instalment we'll look at the vehicle recovery.

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