



GRIP IT!

Highway terrain, all-terrain or mud terrain... that is the age-old 4x4 question. So we devised a test to find out which type of tyre is best in various conditions.

Text: Danie Botha **Photos:** Deon van der Walt

LET'S kick this off by stating the obvious: a highway terrain tyre fares best on the road; an all-terrain tyre is a compromise between road and dirt; and a mud terrain tyre is the choice tyre in a tough off-road environment. This is a logical, and obvious deduction.

But how much better is the highway terrain tyre versus the all-terrain versus the mud terrain tyre on any given Sunday on say, a wet road? Which one should you fit?

The answer to that is, well, rhetoric: how long is a piece

of string? In other words, it very much depends what you intend doing with your 4x4.

Do you intend driving the Rubicon trail every day of the week? Easy, fit the mud terrains. With their superior off-road grip and tough sidewalls, they are just the ticket.

Driving 99% on tar and a tiny bit on the gravel? Then the highway terrain option (theoretically) makes more sense. So, all things said, the all-terrain tyre must be the best option if you want to mix off-road capability with

on-road composure and sure-footed handling? Right?

To find out what tyre works best where, and by how much, we roped in two professional drivers, three sets of General Tire tyres, three sets of Racing Hart rims, and a Toyota Hilux 2.8GD-6 4x4 (fitted with an Old Man Emu suspension). We also used state-of-the-art satellite vehicle dynamics systems to measure lap times, speed and distance. But before we get to the nitty-gritty, a more detailed look at the ingredients of this test.

THE RUBBER



■ GENERAL GRABBER GT ■

Size: 265/70 R16
Maximum speed rating: 210km/h
Load rating: 1 120kg (per tyre)
Maximum inflation: 350 kPa
Weight (per tyre): 15.3kg
Place of manufacture:
Timisoara, Romania
List price: R2 301 per tyre

■ GENERAL GRABBER AT ■

Size: 265/70 R16
Maximum speed rating: 190km/h
Load rating: 1120kg (per tyre)
Maximum inflation: 300 kPa
Weight (per tyre): 18.9kg
Place of manufacture:
Port Elizabeth, South Africa
List price: R2 134 per tyre

■ GENERAL GRABBER MT ■

Size: 265/75 R16
Maximum speed rating: 160km/h
Load rating: 1 400kg (per tyre)
Maximum inflation: 550 kPa
Weight (per tyre): 26.2kg
Place of manufacture:
Mount Vernon, USA
List price: R4 377 per tyre



THE SUSPENSION

Although the Toyota Hilux's standard suspension set-up (double wishbones up front and leaf springs at the back) is tough enough, we decided to install a full Old Man Emu suspension, courtesy of 4x4 Mega World, just for this test.

Firstly, we scored a few millimetres of clearance with the aftermarket suspension – the overall diameter of the mud terrain items is bigger than the all-terrain and highway terrains, and we didn't want to cause damage to the Hilux when it was driven dynamically by a motorsport legend. The beefed-up OME suspension is also more suited to dynamic off-road driving at the crazy velocities Hannes Grobler manages to achieve on a rough gravel track.

More information:
4x4megaworld.co.za

THE TEST VEHICLE

Toyota can hardly build enough Hilux bakkies to keep up with the demand, so we went the popular Hilux route when selecting a base vehicle for all the tests.

This is the 2.8GD-6 4x4 automatic model,

and the new four-cylinder turbodiesel engine delivers 130kW of power and 450Nm of power, the latter peaking at 1 600r/min. It's a part-time 4x4, so in default mode it runs in rear-wheel drive with a modern traction control system sorting out the details.

The new Hilux did away with the traditional *kort stokkie* transfer case selector, and there's now a twist dial on the dashboard to select between 2H, 4H and 4LOW. A rear differential lock is also standard.

The cabin is a luxurious

and modern place, with comfortable seats and plenty of space.

This model sells for R570 600, and it includes a five-year/90 000km service plan.

More information: toyota.co.za





THE RIMS

To keep things as equal as possible, we secured 12 similar 16-inch rims. The rims were supplied by Racing Hart Concepts (RHC), a Joburg-based company that not only imports wheels from all over the world, but also manufactures its own rims locally.

The Dennon wheels are locally made, and feature a satin black face with a machined lip area, and detailing to create a rugged, bead-lock look. The rims are sold at leading retailers throughout South Africa.

More information: rhc.co.za

THE DRIVERS

Hannes Grobler



Hannes Grobler is a local motorsport legend. His sideways antics in a 600 horsepower Nissan Skyline 4x4 is the stuff of legends, and he has more motorsport titles behind his name than this page has space for. Nowadays he manages the 4x4 Mega World Zambesi branch in Pretoria North.

Jakes Jacobs

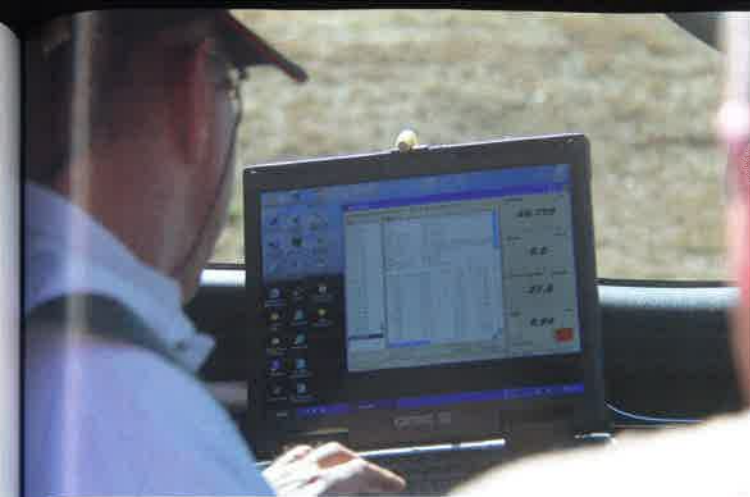


Jakes Jacobs has been testing vehicles of all shapes and sizes at the Gerotek vehicle testing facility for the past 30 years. He is also a racing champion and has won a few rally events. Consistency and repeatability is what Jakes is after, no matter if he tests a 14-wheeler truck, an armoured vehicle or a Toyota Hilux bakkie.

THE VENUES

For the main off-road tests, we used the McCarthy 4x4 Club's tracks at the Rhino Park complex, east of Pretoria. We completed the hill ascent off-road test at the Hobby Park 4x4 track in Krugersdorp. And we completed the wet and dry tar handling and braking at the Gerotek vehicle testing facility.





WET TAR (ALL TYRES AT 2BAR)

Water changes the grip game comprehensively. As expected, the highway terrain tyres were the best performers by far, followed by the ATs and muds. What was really interesting, however, was the variation between the same tyres on the different surfaces.

The highway terrain tyres took less than two seconds longer to cover the same lap in the wet. The

all-terrain tyres needed four seconds more to complete the same lap in the wet, and the muds even longer at 4.45 seconds.

In the braking test from 80km/h, the difference was even more obvious. The HT tyre obviously fared best, but the all-terrain tyre needed 6.4m more to stop. The mud terrain tyre though, fared the worst: it required 38.66m to stop, almost nine metres more than the highway terrains.

THE TESTS

We devised seven tests that were aimed mostly at daily driving conditions. As mentioned, it's a given that a mud terrain unit will be best in mud, a highway terrain tyre will be the best on tar, and the all-terrain lives somewhere in between.

Instead, our focus was on the actual differences in performances for day-to-day usage. These days, mud terrain tyres are certainly not only a practical consideration, but also very much a fashionable one. So 4x4 owners who hardly venture out of the concrete jungle will fit muds just because they look cool.

And we agree 100% – chunky muds and some cool rims certainly look the part. However, there is a price to pay for that cool factor, especially in the dynamic department. Let's get the ball rolling with the vital on-road handling then, since that's where a 4x4 spends the vast majority of its life.

DRY TAR (ALL TYRES AT 2BAR)

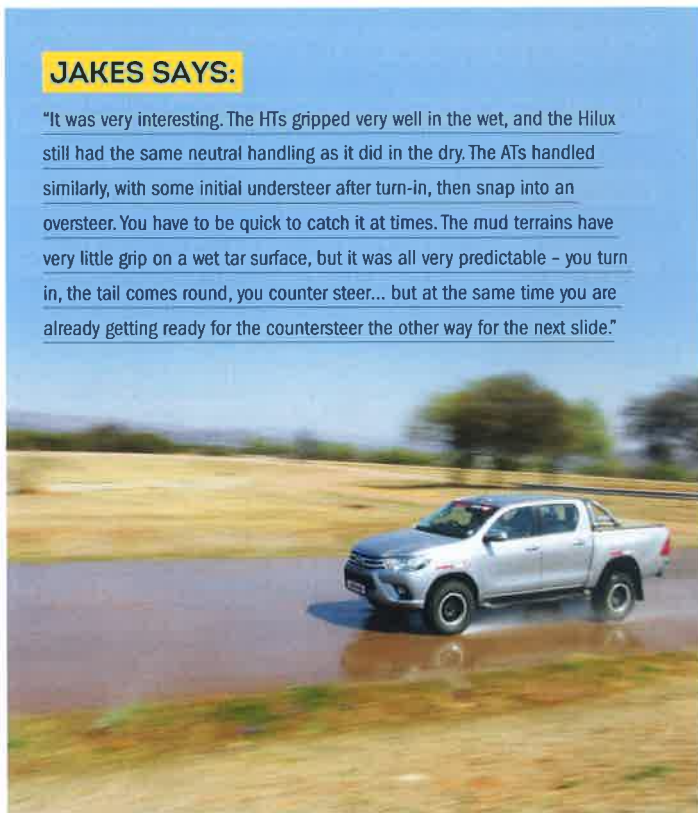
In this test, we asked professional driver Jakes Jacobs to set lap times on Gerotek's dry dynamic handling track. And the results were pretty much as expected: the highway terrains (HT) were the fastest. What was interesting though, is how close the muds and all-terrains finished; less than half a second apart.

In the braking department, the HTs were again best, needing just over a metre less to stop the Hilux. The gap between the muds and ATs was more obvious: the muds needed 1.28 metres further to stop than the ATs.

More significantly though, was the gap between the muds and highway terrains: 2.5 metres. That's braking from 80km/h – at 120km/h that distance will be much more significant.

JAKES SAYS:

"It was very interesting. The HTs gripped very well in the wet, and the Hilux still had the same neutral handling as it did in the dry. The ATs handled similarly, with some initial understeer after turn-in, then snap into an oversteer. You have to be quick to catch it at times. The mud terrains have very little grip on a wet tar surface, but it was all very predictable – you turn in, the tail comes round, you counter steer... but at the same time you are already getting ready for the countersteer the other way for the next slide."



JAKES SAYS:

The Grabber GTs' grip increased the hotter they got.

Handling is very neutral – turn-in is good, and once you're in the corner, you can feed in the power and the tyres will grip. With the all-terrains, the Hilux understeered more, but there was still a surprising amount of grip available. Up to a point though, and then they would let go rather briskly. The muds were sliding all over the place, as you'd expect – but at least the slides were progressive and you could feel them coming from miles away."





OFF-ROAD GRAVEL ASCENT (ALL TYRES AT 1.6BAR)

In this test, we wanted to test off-road traction... much like you'll find on a 4x4 track. So with the Hilux in two-wheel drive only, and with the traction control switched off, we used the same incline at Hobby Park, starting the climb from standstill and with the engine revolutions kept as close to 1 500r/min as possible until the rear wheels lost traction.

And here the muds obliterated the HTs and ATs, recording an average distance of 2.23m from standstill. The all-terrains managed 1.44m and the highway terrains 1.14m. So clearly the muds' more aggressive tread pattern came to the party here, just as it would in mud.

Just for interest's sake, and because the stronger sidewalls on muds allow for lower pressures, we deflated the mud terrains to 0.8 bar, just as an experiment to see what difference it would make: and the Hilux recorded 2.89m before the rear muds started digging to China, instead of providing forward momentum.

SAND DRIVING (ALL TYRES AT 1.6BAR)

For this test we set out a tricky slalom test at Rhino Park's famous sand pit. With the tyres deflated to 1.6bar, rally champion Hannes let rip, setting three comparable lap times with each type of tyre.

And here the results were quite interesting. The muds took the victory by a very small margin, finishing a fraction of a second ahead of the all-terrains. The highway terrains' road-oriented tread counted against them here, as they posted a time of nearly two seconds slower than the muds with their chunky "sand scoops". But it was a very close call between the ATs and muds.



HANNES SAYS:

"The more rigid sidewalls on the muds, which is obviously hugely beneficial in a rough off-road environment, caused the tyres to bounce more and flex less. The all-terrain sidewalls flexed more, and the tyre remained in contact with the gravel more often, so they offered more grip and traction in the end."

GRAVEL DRIVING (ALL TYRES AT 1.6BAR)

We set out a twisty rally stage for our rally champion, and with the Hilux in four-wheel-drive high-range, and with the traction control on the reserve bench, Hannes went about his going-very-fast business. With a much smoother

tread pattern, the HTs were always going to be slower... and they recorded a time of 54.9 seconds.

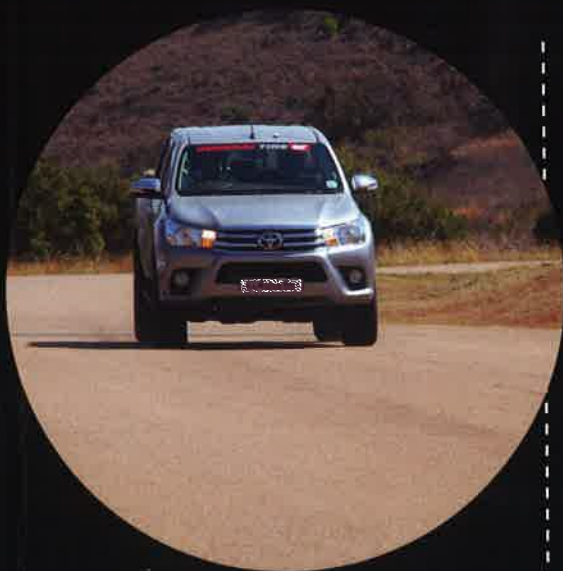
Second were the mud terrains – we'd thought this test had their name written all over it. But with a time of 53.45 seconds, they lost out by almost two full seconds to the all-terrains.

HANNES SAYS:

"At the higher speeds, hitting the little ruts, the mud terrains seemed to bounce more, thanks to their more rigid sidewalls. This resulted in less contact with the sand and ultimately, less grip. That's why the all-terrains came so close. With more flexible sidewalls, the ATs remained in contact with the sand more often and despite less 'paddle power', they did really well."



SUMMARY



What do you want from a tyre? And, conversely, what practical requirements do you have for a tyre? These are the questions.

If you want your 4x4 to look the Camel Trophy part, with mud terrains that will never see mud, then go for the muds if you have the means... but be aware that you compromise your vehicle's driving dynamics, especially on tar.

If you drive 99% on tar and 1% on a gravel road, and you are more concerned about your vehicle's handling and performance on tar than the perceived image of your 4x4, then the Grabber GT is clearly the better option.

And, the all-terrain is in the middle, offering okay grip on tar and very good grip on gravel and sand, with some added sidewall protection if you plan on driving to Timbuktu.

Pricing is, of course, a pivotal selling point... at almost R4 500 per tyre, the Grabber MT is not a cheap option. Interestingly, there is also the weight factor to consider. The Grabber MT weighs 10kg more than the Grabber GT. So if you upgrade all five tyres from GTs to MTs, you also add 50kg to your vehicle.

In the end, you have to decide what it is you want, and what it is you need (and can afford). **W**

RESULTS

HIGHWAY TERRAIN (HT)	ALL-TERRAIN (AT)	MUD TERRAIN (MT)
DRY TAR HANDLING		
27.72 s	28.57s	28.97s
DRY BRAKING (FROM 80-0KM/H)		
28.7m	29.93m	31.21m
WET TAR HANDLING		
29.61 s	32.62s	33.46s
WET BRAKING (FROM 80-0KM/H)		
29.82m	36.26m	38.66m
SAND DRIVING		
37.1 s	35.28s	35.12s
GRAVEL DRIVING		
54.9 s	51.55s	53.45s
OFF-ROAD GRAVEL ASCENT		
1.14m	1.44m	2.23m

TESTING PROCEDURES

DRY TAR TESTS: Rear-wheel drive only, traction control completely disabled, all tyres at 2 bar

WET TAR TESTS: Rear-wheel drive only, traction control completely disabled, all tyres at 2 bar

SAND DRIVING: Four-wheel drive high-range, traction control completely disabled, all tyres at 1.6 bar

GRAVEL DRIVING: Four-wheel drive high-range, traction control completely disabled, all tyres at 1.6 bar

OFF-ROAD GRAVEL ASCENT: Rear-wheel drive, traction control completely disabled all tyres at 1.6 bar

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