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FEATURE



OFF-ROAD TYRES

WORDS BY DEAN MELLOR
PHOTOS BY 4X4 AUSTRALIA

Tyre kicking

There's more to choosing the right tyres for your 4X4 than just giving them a kick. Here's everything you need to know



It seems the single most asked question posed by four-wheel drivers is: "What tyres should I fit to my vehicle?" And for good reason – quality 4X4 tyres aren't cheap: a full set will cost you more than a grand, and you'll be spending that money on items that are essentially consumables.

Yet those tyres are probably the most important consumables you'll ever buy for your rig, especially when you consider that making the right choice can literally be a lifesaver.

THE PROBLEM

The standard tyres fitted to most new 4X4 wagons are not suited to off-road driving conditions; they might look like off-road tyres, but they will most likely have a Passenger (P) construction. What this means is, despite being the correct size and with the appropriate load and speed ratings, they will not be up to the demands of serious off-road driving, or long-distance remote-area travel on unsealed roads.

Vehicle manufacturers fit Passenger construction tyres to even some of the toughest four-wheel drives in their model ranges for a number of reasons. Passenger

consumption. As a result tyres have not only become even more lightweight, but they have also changed shape. They're still round where it counts, of course, but even big four-wheel drive wagons now have lower-profile tyres than they did just a few years ago.

A tyre's profile is its sidewall height relative to its width. For example, a 235/70R16 tyre, as fitted standard to a base-spec 2002 Land Rover Discovery, has been superseded 10 years later by a 255/60R18 tyre on a base-spec 2012 Land Rover Discovery. On the 2002 model, '235' refers to the section width of the tyre in mm, '70' refers to the height of the sidewall as a percentage of section width (70 percent of 235mm equals 164.5mm), R means the tyre is a radial tyre, and 16 refers to the wheel diameter.

On the 2012 model – which has a 255mm section width with a lower profile of 60 percent – the sidewall height is only 153mm, while the R still refers to radial and the 18 means the tyre needs to be fitted to an 18-inch diameter wheel.

Lower profile tyres have significant handling advantages on the road, primarily because their lower sidewalls

The standard tyres fitted to most new 4X4 wagons are not at all suited to off-road

construction essentially means the tyres are built as light as possible to allow them to dissipate heat easily, which aids tyre life; to allow them to flex, which improves ride quality and comfort; and to minimise rotational inertia, which benefits fuel economy.

Passenger construction tyres will also likely feature a car-like tread pattern which will aid on-road handling in dry and wet conditions, minimise braking distances on the road, extend tread life, aid fuel economy and minimise noise levels.

Take these lightweight tyres off the road and you could face several problems. Firstly, the thin, flexible sidewalls will be prone to damage from rocks, sticks and other sharp objects, the tread surfaces will be prone to punctures and the tread blocks to chipping and breaking away. Also, the car-like tread pattern won't offer much in the way of traction in slippery conditions.

The problem of Passenger construction tyres fitted to four-wheel drives has become more prevalent over the past few years as vehicle manufacturers strive for even better on-road ride, handling and fuel

don't flex so much, which aids cornering and braking performance. But off the road it means there's less space between the uneven surface of the ground and those shiny 18-inch wheels fitted to the 2012-model Discovery used in the above example. In other words, the rims are more prone to damage, as are the tyre sidewalls themselves – they can be more easily pinched in the smaller gap between the ground and the wheel rim.

Just about all manufacturers have gone down the path of fitting lower profile tyres to larger diameter wheels on modern four-wheel drives. As well as the handling and braking benefits, bigger wheels also allow them to equip the vehicle with bigger brake discs and calipers for even better braking performance.

THE SOLUTION

The solution for those who want to drive their four-wheel drives off-road seems obvious: fit tougher tyres.

Regardless of the tyres you want to fit to your vehicle, there are certain minimum criteria they must meet or exceed



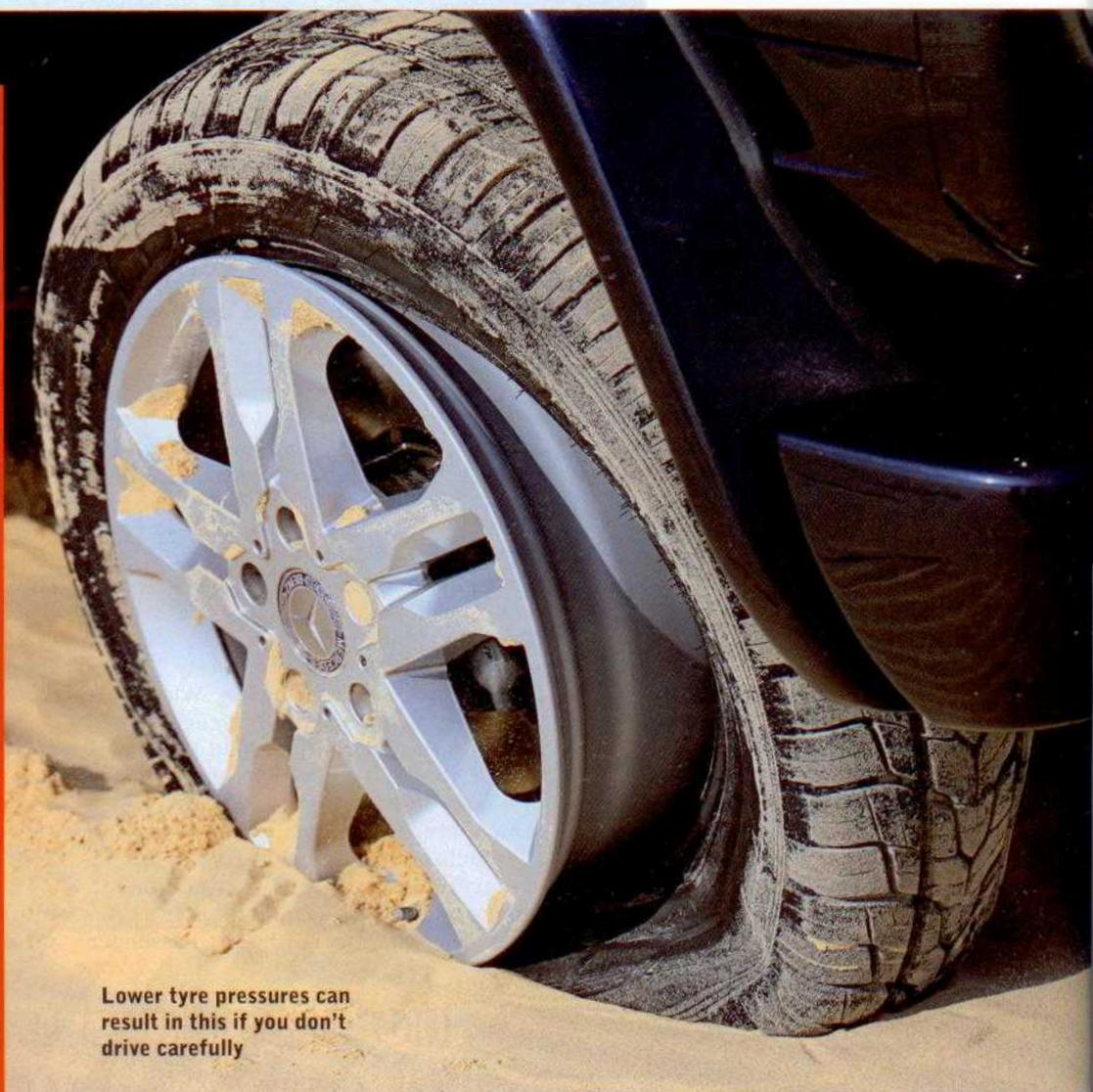
When it comes to looking after your tyres, there's no better place to start than by checking the tyre pressures, and doing it regularly. Low pressures generate high temperatures, which in turn cause the tyre to deteriorate rapidly.

While you're crouched down checking the pressures, have a good look over the tyres, checking the tread for any punctures, cracks or chipped tread blocks, and inspecting both the inner and outer sidewalls for any signs of damage or discolouration – if it has a blue hue, chances are it has been running too hot. Also have a good look at the valve stem and check the valve itself isn't leaking and that the dust cap is in place.

A tyre pressure monitoring system (TPMS) is a great way to keep an eye on your tyres. It tells you the pressure and temperature of each tyre and alerts you to any sudden drops in pressure that can prevent a blow-out. Just one tyre saved by a TPMS is usually enough to pay for the device.

Assuming your spare tyre is fitted to the same style wheel as the other four tyres on your vehicle, add it to your tyre rotation cycle – you'll go 25 percent further before you have to buy a new set of tyres and, if you change tyre model or brand, your new spare will match the other four new tyres.

Finally, use the correct tyre pressures for the conditions. The obvious example here is to lower your tyre pressures when driving in sand. It will result in better grip, less wheel spin and less potential damage to your tyres and your vehicle's driveline. Just be careful however that you don't roll a tyre off the rim by cornering too hard.



Lower tyre pressures can result in this if you don't drive carefully

“Regardless, for off-road use you'll

concerning tyre size, speed rating and load rating. This information is listed on your vehicle's tyre placard, usually affixed to the inside of the glove box lid or on or near one of the front doors. The tyre placard will list the tyre size suitable to the wheel fitted to your vehicle, the speed rating for the tyres and the minimum load rating for the tyres. It will also list recommended tyre pressures depending on the load on-board the vehicle.

Armed with the info on the placard, selecting the right tyre size for the wheels fitted to your vehicle is straightforward. And like the tyre size, the speed and load ratings are listed in a code stamped into the tyre's sidewall (see Numbers game, page 84). For example, a tyre marked 265/75R16 119N has a Load Index of '119', which means it is capable of carrying a maximum of 1360kg, and a speed rating of 'N', which means it should not be driven at speeds greater than 140km/h.

You can legally fit tyres with a lower speed rating than that listed on the placard so long as you don't exceed the maximum

speed listed on the tyre and the tyre's speed rating is at least 'N'. In Australia, tyres with off-road features must have a minimum speed rating of 'N' anyway.

When it comes to load ratings, you must never fit tyres with a lower load rating than that listed on your vehicle's tyre placard.

If you're driving mainly on the road with occasional forays on to unsealed but well maintained roads, a Passenger (P) construction tyre will most likely be up to the task. However, if you do a significant amount of off-road driving, or you're going on a long trip to the outback on rough, unsealed roads, you'll need to upgrade to a tyre with a Light Truck (LT) construction.

An LT tyre is built more heavily than a P tyre, with extra strengthening in the sidewalls and across the tread area. This is achieved in a number of different ways, often by adding more plies (or layers) as the tyre is built, making those layers out of tougher materials, and by altering the design of the tyre carcass and the way it is put together.

Due to their tougher construction, LT tyres are better able to withstand the



Adding larger tyres to your 4X4 does have its limits!



Tyre repairs

If you're driving off-road, you should carry a tyre-repair kit and know how to use it. You'll also need a suitable air compressor and spare valve stems and valves, a valve tool, tyre plugs, patches and – if you have tubed tyres – spare tubes and tyre levers. Also check the condition of your jack and carry a large jacking plate in case you have to change a tyre on soft ground.

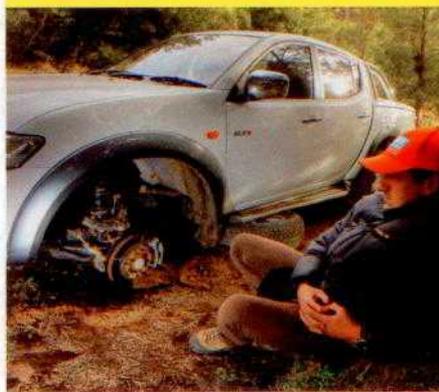
rigours of off-road driving, offering far better puncture resistance in the tread area and the sidewalls, but there are a few on-road drawbacks; primarily, they are heavier so fuel consumption will increase, and their less-flexible sidewalls can affect ride quality.

It should be noted that in this day and age of low-profile tyres on four-wheel drives, you simply can't get LT tyres for some 4X4s, especially those with big-rim diameters such as 18-inch and above. There are more suitable tyres available for these vehicles for off-roading than the standard rubber, but not for hard-core off-road work or remote-area travel.

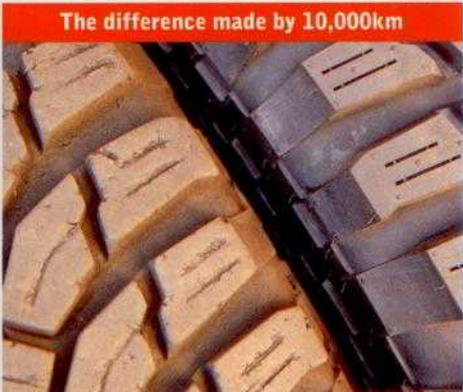
Assuming you can source LT construction tyres for your vehicle, the next decision to

make is how aggressive you need the tread pattern to be. Different tyre manufacturers have different recommendations on what tyre to choose depending on how much off-road driving you intend to do, but the type of off-road driving you'll encounter is just as important. Regardless, for off-road use you'll want a tread pattern that's more aggressive than a highway tyre.

By aggressive tread pattern, we mean a tyre with wide-open blocks that allow the tyre to get good bite in slippery terrain, such as in mud or on rocky hills. But bear in mind, the more aggressive the tread pattern, the less effective the tyre will be when driven on the road; it won't wear as well, it will make more noise and it will not offer the handling and braking performance of a



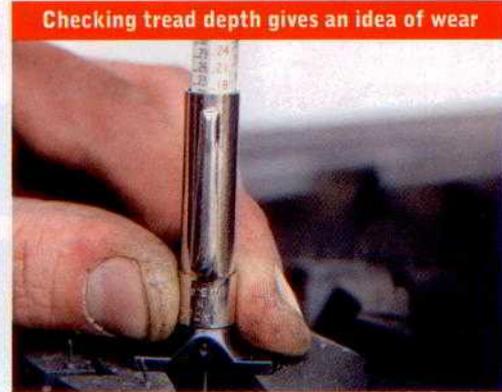
want a tread pattern that's more aggressive"



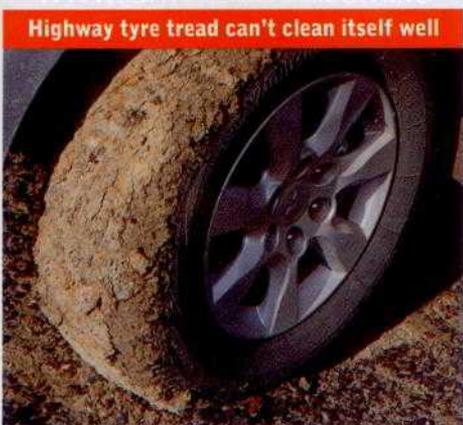
The difference made by 10,000km



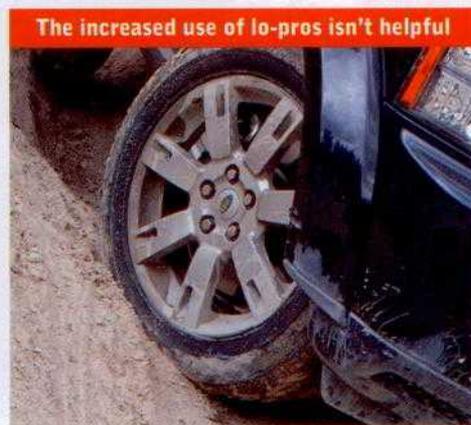
D4 with 19-inch rims limits tyre choice



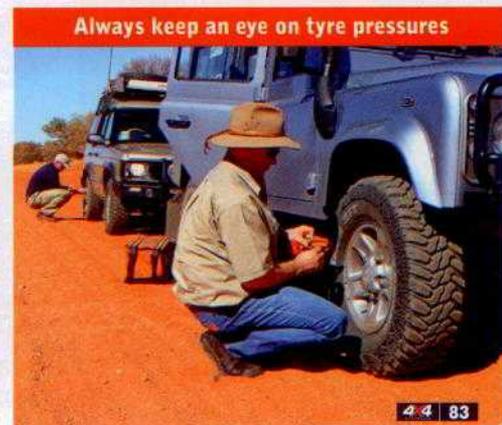
Checking tread depth gives an idea of wear



Highway tyre tread can't clean itself well



The increased use of lo-pros isn't helpful



Always keep an eye on tyre pressures

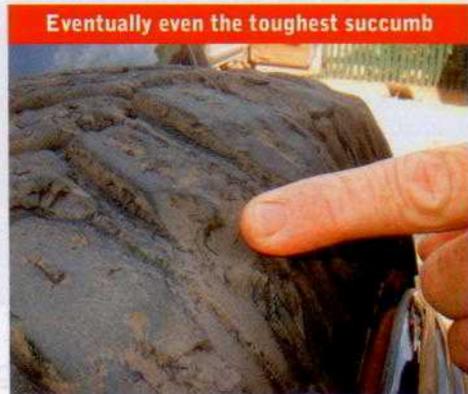
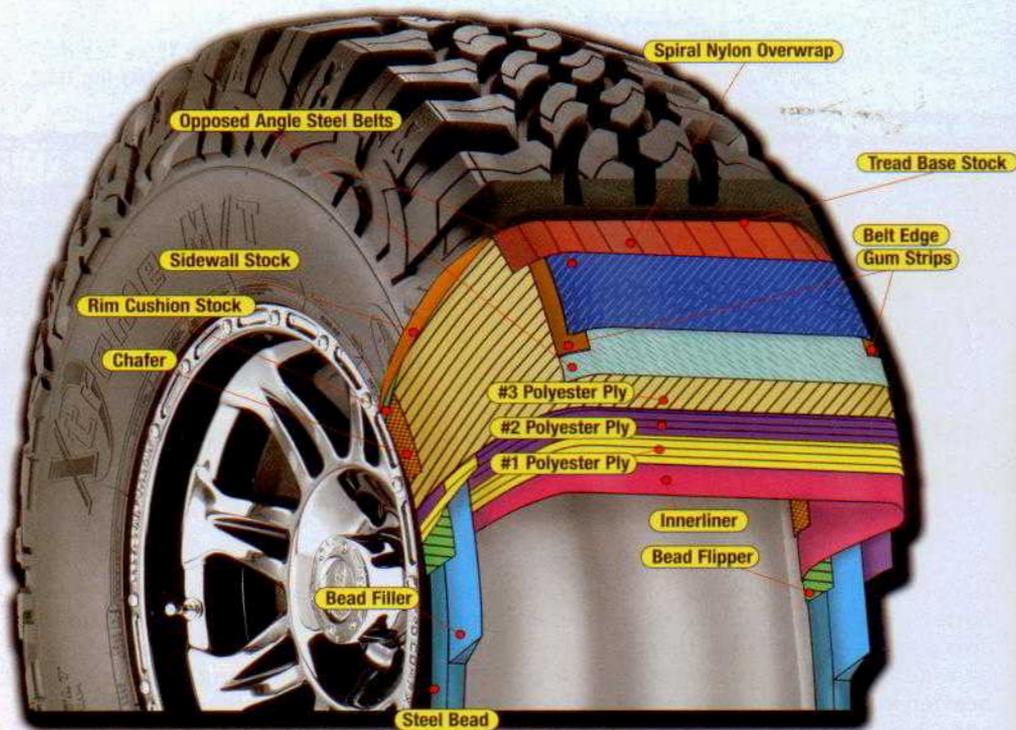
Numbers game

235/65R17 106T
 235 = section width in millimetres
 65 = aspect ratio, as a percentage
 R = radial
 17 = rim diameter, in inches
 106 = load rating
 T = speed rating

9.50R16LT
 9.50 = width in inches
 R = radial
 16 = rim diameter, in inches
 LT = light truck construction

32X11.50R15LT
 32 = diameter of tyre, in inches
 11.50 = section width, in inches
 R = radial
 15 = rim diameter, in inches
 LT = light truck construction

SPEED RATINGS	LOAD RATING	(Max weight per tyre)
J	100km/h	101
K	110km/h	102
L	120km/h	103
M	130km/h	104
N	140km/h	105
P	150km/h	106
Q	160km/h	107
R	170km/h	108
S	180km/h	109
T	190km/h	110
U	200km/h	111
H	210km/h	112
V	240km/h	113
W	270km/h	114
Y	300km/h	115
VR	>210km/h	116
ZR	>240km/h	117
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		119
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		125
		126



“... they start to wear and become noisier on the road”

tyre designed specifically for on-road use. Most tyre manufacturers offer LT tyres in a couple of different tread patterns. An intermediate tyre – with a tread pattern about halfway between a highway tyre and a heavily block-treaded mud tyre – will suit the four-wheel driver who spends most of their time on the road but still needs something aggressive for the occasional off-road trip on unsealed roads or formed tracks. A super-aggressive mud tyre, however, is a no-compromise option designed specifically for regular off-road use. If you buy muddies simply because they look tough, you’ll probably regret it as they start to wear and become noisier on the road.

The ideal solution for the four-wheel driver who spends a lot of time on the road but also has to occasionally deal with very slippery off-road conditions is to fit a set of highway tyres to one set of wheels and LT muddies to another set of wheels,

swapping them over as conditions dictate. But for those who want a do-it-all tyre, an LT with an intermediate tread pattern is a good compromise.

THE FINAL WORD

There’s plenty of choice when it comes to off-road tyres, but it’s best to go with a brand that you know. Next time you’re at a four-wheel drive show, have a look in the carpark to see what other four-wheel drivers have, or ask your local four-wheel drive specialist (they’ll be able to offer better advice than a general tyre outlet), or have a look at some of the modified vehicles in the pages of *4X4 Australia* – plenty of top-notch advice to be found in that mag, even if we do say so ourselves.

And when you bump into fellow four-wheel drivers, chances are that at some stage you’ll end up talking about tyres. After all, it’s every four-wheel driver’s favourite topic. **44**