## OTKE TEST

Upping your car's cornering G-force by 10 percent is the stuff of a sports suspension upgrade, right? And cutting a car-length from your braking distance is the work of a set of Brembos?

Nope, you just need a great set of tyres





### WORDS NATHAN PONCHARD PHOTOS NATHAN JACOBS

HERE'S more than a hint of deja vu watching gun-for-hire, Renato Loberto, thread a Holden ZB Commodore through a set of witches' hats – at least for a 40-something car nerd like me.

It's an early-millenium reprise of GM-H's Radial Tuned Suspension TV ad, only this time it's a front-drive turbo four carving up the slalom test rather than a rear-drive HZ Kingswood. Yet the exercise is identical – a traditional family passenger car threading its way around plastic obstacles – and the need for quality rubber just as vital, even in an era of blanket inclusion of stability control in new cars.

In much the way that no two vehicles' ESC systems are created equal, no two tyre patterns deliver the same performance. The greater the ability of your contact patch to respond to the driver's requests, the less pressure there is on the safety electronics to try and mop up the mess afterwards. Of course, if there's no mess in the first place...

The thinking behind this year's Tyre Test relates to the actual tyre size – 245/45R18. It's an increasingly common fitment for everyday vehicles, and when extrapolating the results, allows some movement in terms of size (incorporating, for example, 225/45R17 – a common size for up-spec small cars). There's also broad relevance to the buying public in that a 245/45R18 suits a variety of mainstream and premium models.

Much like last year, the magnitude of the difference between the bestand worst-performing tyres in our 80km/h dry braking test spanned a significant 2.93 metres, and that's averaging three runs under full ABS activation. Add water to the surface and that gap expands to 4.33 metres, or more than the length of a Volkswagen Golf. That's the difference between a scratch-free existence and a significant clobber up another car's jacksy. Is a budget set of tyres really worth the financial pain and physical/mental suffering?

The 2018 Wheels Tyre Test involves 11 tyre brands, spread across five disciplines that span a broad spectrum of a tyre's ability, aside from wearlife (which is difficult to measure in two days.) In order to thoroughly test 11 passenger-car tyres in 245/45R18 size and a further 13 SUV tyres (in 225/65R17 size, as fitted to a Mazda CX-5 Maxx Sport, and covered in detail at WhichCar.com.au/features/wheels-tyre-test-2018) across two days, we deleted the hot-lap discipline, given that the slalom and Renato's comments are indicative of a tyre's racetrack prowess.

Just as in previous years, the vast bitumen carpark surrounding Sydney Dragway's scrutineering shed provided the venue, and a Racelogic Performance Box and stopwatches spat out the data. Tyre-test guru, Renato Loberto, proved he's worth every cent of the works burger and chips we fed him each day at lunch by delivering incisive, super-consistent technique and invaluable observations.

The method: after taking a tyre-noise reading at 60km/h, Renato scrubs the surface of the tyres through a series of (often dramatic) slalom dry runs before laying down actual timed runs. Next up is a dry braking test, followed by a repeat on a consistently wet surface, then a wet corner test. Control tyres are deployed to measure track and vehicle changes, which can be addressed in the data analysis.

Each discipline is repeated three times, averaged, and scored out of 10, with tyre noise scored out of five. Scores are scaled and assigned relative to the best performer – if one tyre wins everything, it will receive a perfect 100 percent. In the wash-up, all three podium finishers rated an excellent 97.8 percent or above, for a similar price.



### THE FIELD

With an 11-strong field in 2018, this year's Wheels Tyre Test spans a broad section of the market for a 245/45R18 tyre, to suit the increasingly common 18-inch wheel. The 245mm width and 45-series profile represents a happy medium between baggy base-model fodder and proper low-profile rubber. In terms of market positioning, the grid runs from Indonesia's budget-minded Achilles to Germany's Continental, with Michelin's more affordable BFGoodrich brand, Korea's Hankook and Nexen, Japan's Falken, Italy's Momo, Taiwan's Maxxis, Singapore's GT Radial, and China's Hifly and Vitora fleshing out the field. With new products coming, Bridgestone and Goodyear sat this one out; Yokohama doesn't supply tyres for testing; and Dunlop and Pirelli declined.



### THE CAR

Having previously used a small hatchback (Hyundai i30), a medium SUV (Kia Sportage) and a mid-sized wagon (Mazda 6) as the test mule, we decided upon Holden's German-made, Australian-tuned ZB Commodore RS liftback as a suitable steed for 2018. Excellent handling balance and steering precision, fully switchable ESC, and a common OE tyre size that makes the test's results applicable to a range of models were all prerequisites, and the Commodore RS fulfilled the brief. Said test driver Renato Loberto of his faithful companion: "the new Commodore being a front-wheel drive will no doubt upset pretty much anyone who's ever owned a Holden, but for me it has made the car a lot more agile."



### THE DRIVER

From his chilled disposition and easy-going humour, you'd never know 37-year-old Renato Loberto was a sleep-deprived father to a young daughter and head honcho at MotoKinetic, an automotive consultancy specialising in events for manufacturers and dealers, and public events (such as the Top Gear Festivals and World Time Attack Challenge). A racing driver for the past 21 years, Renato finished second in the Bathurst 12-hour in 2016 driving a Ferrari 458 GT3, and has been a driver coach and chief instructor with Ferrari for more than 10 years. He's also waist-deep into a long-term build of an Italian-import 1970 Fiat 500F, complete with the exhaust from a V10 Ferrari F1 engine. Check the beast out on Instagram @enzothe500.



### JAX TYRES & EAGLE SMF

Our ever-reliable and vastly experienced JAX Tyres crew, with equipment and assistance from Eagle SMF Tyre and Automotive Equipment, took over Sydney Dragway's scrutineering shed once again, decking it out like a facsimile of the 80-odd JAX retail locations that span Australia's east. With a spare set of 18-inch rims to allow seamless, pit-lane-style changes, the JAX crew re-fitted sets of tyres in the order of 20 times before inflating each to 33psi as per the Holden's placard. A heartfelt thanks goes out to the JAX boys for successfully orchestrating an epic two days of testing – 11 tyres for Wheels, and 13 SUV tyres for WhichCar.com.au. You can find details of your local JAX Tyres store at www.jaxtyres.com.au.



### THE NUMBER CRUNCHER

A degree in mechanical engineering (the clever sod), a quick-witted timing finger, and considerable experience as both a Wheels road tester (he worked on staff from 2006-13) and Tyre Test data analyst (four years running) makes Jimmy Whitbourn the perfect man to separate the winners from the numbers. Now a freelance journalist, Jimmy splits his time between writing and reviewing for Wheels, WhichCar.com.au and others, and running his car-buying site (CarHelper.com.au).

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## Slalom

The swerve-and-recover test, or slalom – just like the skiing event – is an efficient way to gather meaningful data on a tyre's transient grip level in less than 10 seconds. Across more than 50 runs (including control-tyre stints), Renato only spun the ESC-disabled Commodore once – a 180-degree slide wearing the Momo tyres before they'd been scrubbed in properly. Yet there was plenty of oversteer action as each brand-new set of tyres had their surfaces scuffed to enable the tabulation of consistent, meaningful results. A tyre's slalom performance reflects its real-world ability to swerve to avoid an obstacle, however the feedback it gives us about confidence-inspiring feel, well-telegraphed

handling responses – or otherwise – as well as steering consistency is invaluable. The GT Radial's victory here was undisputed – it was more than 0.2sec ahead of second place – though barely a whisker separated the next five positions, and the top seven all matched or bettered the 5.99sec average. The BFGoodrich put in an unremarkable performance, despite its "consistent, predictable feel on the limit", whereas the quicker Nexen felt a bit vague at the helm and "didn't feel like it suited the car." At the lower end, the Vitora demonstrated "good slide warning on the limit", while the even slower Momo gave "no slide awareness whatsoever", with "very little warning of its limit of lateral grip".



SLALOM	TIME	SCORE
1 GT Radial Sport Active	5.65	10.00
2 Hankook Ventus S1 Evo 2	5.86	9.64
3 Falken Azenis FK510	5.88	9.61
4 Continental Premium Contact 6	5.89	9.59
5 Achilles ATR Sport 2	5.92	9.54
6 Nexen NFera SU1	5.97	9.46
7 Hifly HF805 Challenger	5.99	9.43
8 Maxxis Victra Sport 5	6.02	9.39
9 BFGoodrich g-Force Sport Comp 2	6.19	9.13
10 /// Vitora Sportlife	6.21	9.10
11 Momo Outrun M3	6.29	8.98

WINNER GT Radial Sport Active

"Very quick in the slalom, even when brand new on scrubbing runs," read Renato's notes, which were backed up by the data. The GT Radial was convincingly quicker than the rest of the field, but it also impressed with its "all-round great driving performance and very consistent feel", and was a tyre that allowed the driver to easily feel the limits of grip. The silver-medallist Hankook also garnered praise for being "super consistent" and "very direct and communicative", while the Falken felt "immediately grippy on the slalom, with almost no sliding whatsoever (without serious provocation)".



You would've thought that simply jamming on the picks as hard as you can and letting the anti-lock braking system (ABS) sort out the rest was a given in a modern car. And it is, but not without one big variable – tyres. Punished over the same section of coarse-chip bitumen at the back of Sydney Dragway, our Dry Braking test was judged by averaging three individual stops from 80km/h, with the Commodore's brakes allocated equal time and distance to cool down between each run, for every tyre. A control set was also deployed at regular intervals to gauge any change in surface condition or tarmac temperature. More than 50 dry-surface emergency stops gave us both the stopping distance

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in metres – the data we used to score each tyre – as well as the peak and average G of each braking manoeuvre. Straight off the bat, the BFGoodrich smashed a consistent peak of 1.1G in the dry and the wet (see Wet Braking results) – "the first time I've seen that in a Wheels Tyre Test," said Renato – though its 26.40m stopping distance saw it finish fifth here in the dry, just ahead of the 26.42m average. The Vitora brought up the rear, nearly three metres adrift of the winning Hankook (below) and half a metre behind the 10th-placed but consistent Nexen, which recorded the same average and peak G readings ("indicating it has good overall longitudinal grip," commented Renato).

DRY BRAKING DIS	TANCE	SCORE
1 Hankook Ventus S1 Evo 2	24.87	10.00
2 Continental Premium Contact 6	25.17	9.88
Falken Azenis FK510	25.47	9.77
4 Maxxis Victra Sport 5	25.77	9.65
5 BFGoodrich g-Force Sport Comp 2	26.40	9.42
6 GT Radial Sport Active	26.43	9.41
7 Achilles ATR Sport 2	27.00	9.21
8 Hifly HF805 Challenger	27.03	9.20
9 Momo Outrun M3	27.27	9.12
10 Nexen NFera SU1	27.37	9.09
11 /// Vitora Sportlife	27.80	8.95





Not only did the Hankook record a solid 1.1G for all its braking runs, it was the only tyre to sneak under 25 metres for stopping distance – 30cm shorter than the consistently powerful Continental. Interestingly, much like their performance in the slalom, the Hankook, Continental and Falken crowded the top-end of this year's field, each earning plenty of praise from our driver. "In terms of wet and dry braking performance, it's the best tyre we've tested so far today" said Renato, with the Hankooks wrapped around the Holden's 18s. But it was the Continental that proved the most consistent, clocking a 25.1m in its first run and a pair of 25.2s thereafter.

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Writing on the 'wall

Everything you'll ever need to know about a tyre – and some things you may not – are right there on the sidewall

### **VEHICLE TYPE**

Some tyres start with a letter indicating the intended vehicle type. Passenger car tyres start with 'P'; space-savers start with 'T' for temporary.

### **SECTION WIDTH**

The nominal section width of the tyre in millimetres. This is the width between the outer sidewalls at their widest point, rather than the width of the tread.

### ASPECT RATIO

The aspect ratio is a two-digit number describing the sidewall height as a percentage of the section width. Our 245/45R18 tyre has a sidewall that is 45 percent of 245mm. That is 0.45 x 235mm = 110.25mm.

### **SPEED RATING**

Tyre speed rating represents the maximum speed the tyre is rated to for sustained driving. It is illegal to fit tyres with a lower speed rating than that specified by the car manufacturer. Passenger tyres are designated with the letters N to Z excluding 'O' and with the addition of 'H'. The corresponding speeds range from 140 to 300km/h. 'Z' refers to a speed 'over 240km/h' and may be followed by W (over 270km/h) or Y (over 300km/h).

### CONSTRUCTION

An optional letter indicates construction of the fabric carcass of the tyre. Where present, it is invariably 'R' for radial. Other tyre types include bias belt (B), diagonal (D) and cross-ply, for which a letter is omitted

### **RIM DIAMETER**

The wheel size that the tyre is designed to fit, expressed in inches in a carryover from a US standard.

### **LOAD INDEX**

A number representing an individual tyre's load rating, from 81 (462kg) to 96 (710kg).

### **MANUFACTURE DATE**

Refers to week and year of manufacture. For example, a tyre stamped 1418 was manufactured in the 14th week of 2018. Some older tyres have three digits, with year instead expressed with one digit. Six years is a common replacement recommendation.

### **TREADWEAR**

A comparative rating of the wear rate of a tyre. In theory, a tyre with a 200 grade will wear twice as long as a tyre with a 100 grade. Treadwear, with Traction and Temperature ratings, form the Uniform Tyre Quality Grading (UTQG) set of standards.

### **TRACTION**

A grade representing a tyre's ability to stop on a wet road. From highest to lowest, they are AA, A, B and C.

### **TEMPERATURE**

A grade representing a tyre's resistance to the generation of heat at speed. Tyres graded A can dissipate heat at a maximum speed greater than 185km/h, B between 161 and 185km/h and C between 137 and 161km/h (figures converted from mph).



## Wet Cornering

Even more so than the wet braking discipline, Wet Cornering proved a definitive differentiator between the greats and not-sogreats of the group. Measured by entering a consistently soaked double-apex left-hander at 60km/h, the Commodore revving hard in third gear, Renato would squeeze on power and build G-force during the first part of the corner before truly testing the wet threshold at the slippery second apex. While the Momo

it compounded a below-par wet braking performance by giving up when push came to shove. "At 0.92G it was fine and controllable; at 0.93G it massively understeered," commented our testing ace. The GT Radial clearly telegraphed its limit of grip (with a 0.95G average), however "the transition from max grip to slip is a very small window," said Renato. In contrast, the last-placed Vitora offered "good slide warning on the limit", however its limit was

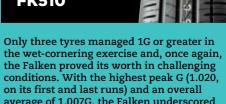








DRY BRAKING LAT	ERAL G	SCORE
1 Falken Azenis FK510	1.007	10.00
2 Continental Premium Contact 6	1.000	9.93
Maxxis Victra Sport 5	1.000	9.93
4 Hankook Ventus S1 Evo 2	0.967	9.60
<b>5</b> BFGoodrich g-Force Sport Comp 2	0.953	9.47
6 GT Radial Sport Active	0.947	9.40
7 Achilles ATR Sport 2	0.947	9.40
8 Nexen NFera SU1	0.940	9.34
9 Momo Outrun M3	0.923	9.17
10 Hifly HF805 Challenger	0.917	9.11
11 Vitora Sportlife	0.913	9.07



the wet-cornering exercise and, once again, the Falken proved its worth in challenging conditions. With the highest peak G (1.020, on its first and last runs) and an overall average of 1.007G, the Falken underscored why it's such a superlative all-rounder -"incredible grip in wet cornering; almost no sliding at all doing 73km/h" commented Renato, even though it only needed to complete the exercise at 60km/h. Renato could keep adding power and the star wet-cornering tyres - Falken, Continental, Maxxis, and Hankook - could cop the greater load before transitioning predictably into the inevitable front tyre slip.

# Wet Braking

It's the one discipline that separates the mighty from the mediocre by a big margin ... and we're talking about brand new, correctly inflated, high-spec tyres here! Not the worn, flaccid, often terrifying treads (or lack thereof) so often seen in the carparks of Australia. Much as it played out last year, the worstperforming tyre in the wet took more than four metres longer to stop than our braking champion, the Falken Azenis FK510. The Momo actually felt good and performed dependably during the braking tests. "Braking performance in both wet and dry was

consistent," reported Ren. It turned out the stopping distance was consistent too – consistently long. Yet it was the wet braking discipline that betrayed the final finishing order of our bottom five. The top four wet brakers - Falken, Hankook, Continental and Maxxis - all marked their territory by finishing well ahead of the rest. Not surprisingly, that's almost how the podium played out in the final wrap-up. Consistency is the key to braking success, an area where the Vitora failed to rate, with a 1.3m variance between its wet stops and "a long ABS hit on initial pedal application".a



SLALOM	DISTANCE		SCORE
1 Falken Azenis FK510	25.50		10.00
2 Hankook Ventus S1 Evo 2	25.77		9.88
<b>3</b> Continental Premium Contact 6	25.90		9.85
4 Maxxis Victra Sport 5	26.33		9.68
5 GT Radial Sport Active	27.27		9.35
6 BFGoodrich g-Force Sport Comp	2 27.67		9.22
7 // Vitora Sportlife	27.77		9.18
8 Nexen NFera SU1	28.17		9.05
9 Hifly HF805 Challenger	28.70		8.89
10 Achilles ATR Sport 2	29.27		8.71
11 Momo Outrun M3	29.83		8.55

The Falken proved "incredibly consistent", managing to clock a stellar wet braking performance only marginally longer than its dry braking distance. How much? Try just 33mm! And it kept improving with each wet stop, clocking 25.8m first time out and a field-beating 25.1m on its final wet run, eclipsing the highly capable but not quite as consistent Hankook's best run by 0.3m. Just like its dry braking, however, the Continental topped the field with just half a metre between its best (25.7m) and worst (26.2m) wet-braking stops. The GT Radial and Achilles matched the Continental's consistency, but added braking distance with each run, whereas the Conti improved.



Few surfaces in the world can match the noise generation of an Australian coarse-chip road, so tyre noise does play a vital part in the driving performance of your vehicle. Indeed, the test Commodore RS's original-equipment Continental ContiSportContact 5 tyres each feature a layer of foam coating inside the tyre to cut down road noise - something that's instantly evident when comparing those 245/45R18 tyres to the more aggressive 245/35ZR20 Michelin Pilot Sports on the up-spec VXR. One of the ways low-rolling-resistance eco tyres save fuel is by

turning comparatively little of their kinetic energy into road roar, and the opposite was definitely true of the grippy Hankook. The best-performing tyre in the dry – the Hankook Ventus S1 Evo 2 - also proved the loudest at 60km/h on the relatively smooth bitumen section heading out of the Tyre Test pits, as measured in decibels (dB) using a Sound Pressure Level (SPL) meter set to hold a peak value. The Hifly, on the other hand, compounded its mediocre straight-road tyre noise by also adding "quite a bit of tyre squeal" in the dry-road dynamic disciplines.

DRY BRAKING '	/OLUME	SCORE
1 GT Radial Sport Active	57.5	5.00
2 Falken Azenis FK510	58.0	4.96
3 Continental Premium Contact 6	58.0	4.96
4 Maxxis Victra Sport 5	58.0	4.96
5 BFGoodrich g-Force Sport Comp	2 58.0	4.96
6 Nexen NFera SU1	58.0	4.96
7 Achilles ATR Sport 2	58.0	4.96
8 Vitora Sportlife	58.0	4.96
9 Momo Outrun M3	58.0	4.96
10 Hifly HF805 Challenger	58.5	4.92
11 Hankook Ventus S1 Evo 2	59.0	4.87



Praised for its "all-round great driving performance", the GT Radial was notably quiet from the get-go. "Not squeally or schreechy in turns, a very consistent feel, and quiet," remarked Renato of the GT Radial's hushed manners. Indeed, it was the only tyre that prompted any seat-ofthe-pants comment about its perceived refinement, backing up the SPL meter's winning findings. The next eight tyres -Falken, Continental, Maxxis, BFGoodrich, Nexen, Achilles, Vitora and Momo - all recorded an identical 58.0 dB, which perhaps says more about the lack of a really rough, country-road-rivalling surface at our test facility than any real-world equivalence.

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### It also ran

The test results for a tyre, in a particular size, on a particular vehicle are broadly reflective of that tyre's performance in other sizes and applications. Want the proof? This year, in a facsimile of the *Wheels* Tyre Test, online sister title WhichCar.com.au held its own program. Different test vehicle and field of contestants; same course and weather conditions.

And guess what? Of the brands present for both tests, there was no shock result. The cheapies occupied the tail-end; the likes of Maxxis, BFGoodrich and GT Radial put in very respectable performances; and some big names did very, very well.

So to uncover the value-for-money 17-inch boots for your SUV that deliver a stack of grip for comparatively little cash, that's where the WhichCar Tyre Test comes into frame.

WhichCar's bumper 13-tyre grid topped the *Wheels* field by two, and boasted three entries not present for this *Wheels* test: Bridgestone, Goodyear and Dunlop (but not Hankook.) The presence of the majority of big tyre brands seems to say the same thing the new-car sales chart does – SUVs are where it's at. And at least one brand among the additions will be pleased it turned up.

Digging more deeply into the results brings revelations on which tyre is best for particularly wet parts, which is the star stopper, which is the maestro of feel and progression, and which has the most grip, just quietly. (Spoiler alert: it's possible we're talking about just one tyre here.)

You can read the full wrap – and watch the videos from both Tyre Tests – online now at WhichCar.com.au.









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From the outset, it was clear the Falken Azenis FK510 was in with a real shot. "Extremely consistent; feels like a real high-performance tyre," was Renato's initial comment about this year's winner, and the data consistently backed up that seat-of-the-pants assessment.

With a 98.5 percent total score, the Falken Azenis FK510 is one of the strongest performers we've ever had in a Tyre Test. Close thirds in the Slalom and Dry Braking were merely the entree for its wet-surface performance, which was consistently superior to the rest of the field. "Super-consistent the whole way through," was Renato's succinct summation of its many talents, and at an average online price of \$222 per tyre, it's smack-bang in the pricing ballpark of the top four tyres (spanning \$220 to \$235 each).

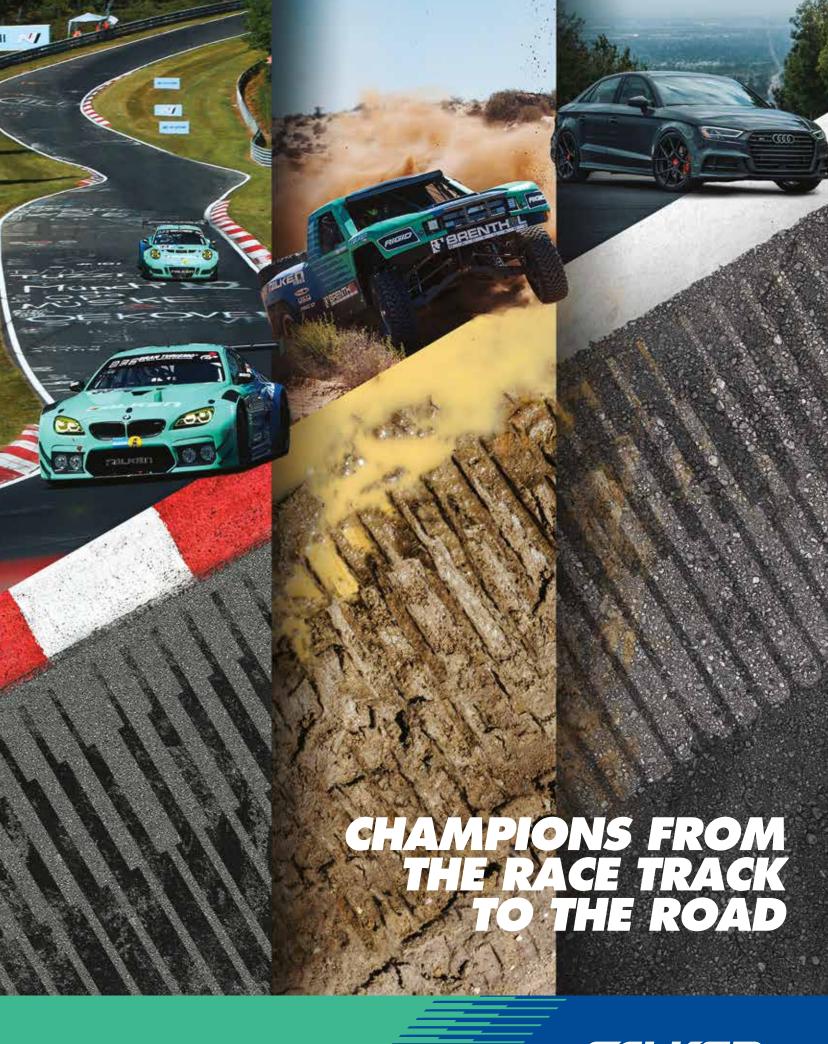
Looking at price versus performance, it's obvious you get what you pay for in a 245/45R18. The Falken, Continental (\$235) and Hankook (\$224) were the three most expensive tyres in the field, and clearly the best-performing. The Hankook blitzed the Dry Braking in much the same fashion as the Falken did in the wet, yet the Falken never finished out of the top three placings. And while the Continental failed to grab the top spot in any discipline, its three silver medals and an excellent 98.2 percent final score see it nipping at the Falken's treads for overall ability. "It feels like it actually has grip, yet when pushed it can be controlled on the limit", said Renato. Ability, control and feel – exactly what you want from a tyre.

At the other extreme, we probably wouldn't be chucking a set of Momos onto anything that lives in areas of high rainfall, due to its lack of progression in wet conditions. The Hifly managed to replicate that sudden change of attitude in dry conditions as well.

So while you'll be paying nearly double the price of the Hifly or Achilles for 2018's Tyre Test winner, the Falken's breadth of ability means that for a \$430 set-of-four premium over the cheapest tyre here, your 245/45R18-wearing vehicle will feel like a completely different (meaning much better) car. "Super-quick and consistent, in both lateral G and stopwatch results", combined with competitive levels of road noise, sounds like the sort of tyre we'd happily recommend to anyone. W

	OVERALL	<b>SCORE</b>	PRICE
	Falken Azenis FK510	98.5%	\$222
2	Continental Premium Contact 6	98.2%	\$235
3	Hankook Ventus S1 Evo 2	97.8%	\$224
4	Maxxis Victra Sport 5	96.9%	\$220
5 ///	GT Radial Sport Active	95.9%	\$189
6	BFGoodrich g-Force Sport Comp 2	93.8%	\$209
	Nexen NFera SU1	93.1%	\$167
8 ///	Achilles ATR Sport 2	93.0%	\$115
9 ///	Hifly HF805 Challenger	92.3%	\$125
0	Vitora Sportlife	91.7%	\$145
AME	Momo Outrun M3	90.6%	\$165

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