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balance_{of} power

The a-workx tuned M3 proved its credentials by winning its class in the Tuner Grand Prix, but is it also an effective road car? Ian Kuah investigates **Photography: Ian Kuah**

Audi and Mercedes have both tried more than once, but neither has succeeded in toppling the BMW M3 from its perch as the definitive compact performance saloon. The M3's secret, in the final analysis, is its unimpeachable balance of strengths.

So the latest car to wear the M3 moniker is still the archetypal king of the hill, albeit by a slightly slimmer margin now than its E46 six-cylinder predecessor was in its time.

It has the best, most adjustable chassis that still has reserves of talent when you dig deep. In fact, when uprated, it does not run out of answers even when faced with deploying the sort of horsepower produced by tuner cars like the 500hp 4.4-litre Brabham Racing BT92, or the mighty 600hp supercharged G-Power M3 we tested earlier this year.

But it was the introduction of the M DCT double-clutch gearbox last year that really put the seal on the M3's abilities. Fast and smooth, this seamless shifter makes the M3 the perfect track day weapon and an entertaining back road blaster yet takes the strain out of tiresome city traffic jams with its excellent automatic mode.

No matter what so-called purists might say about manual shifting being more driver orientated, there is no getting away from the fact that it is impossible for any driver to shift up or down a manual 'box remotely as fast as this system, particularly across the gate.

So if DCT convincingly chips away at lap times, how can you get even more from your M3 without compromising the integrity of that fabulous V8, as well as costing a substantial chunk of the car's worth?

A company south of Munich called a-workx thinks it has found the answer, and to back it up, it entered its M3 in this year's *Sport Auto Tuner GP* and came away with a convincing class win against vastly more powerful opposition.

If exquisite overall balance is the cornerstone of the M3's repertoire, it would be a foolish tuner who upset this. Any power increase has to be matched by a chassis upgrade, and the brakes have to be up to the task of corralling the extra horses effectively as well. You don't need a lot more horsepower to make a car quicker from A-to-B. Better handling and braking

alone can do the trick, and if the car becomes more user-friendly at the limit as well, then you gain the confidence to push harder and so can be quicker even with no horsepower increase.

Better handling does not always mean a stiffer ride. In fact on public roads that fall short of the billiard table smooth tarmac found on many German roads, you need a good secondary ride to filter out the short, sharp bumps that can upset a powerful car trying to deploy its horses mid-corner.

The a-workx coil-over suspension kit is made by KW to its own specifications, and is adjustable for height, bounce and rebound. Wolfgang Kaufmann, one of a-workx's professional drivers, had a hand in the recalibration of KW's Clubsport suspension kit to its specific settings.

For serious trackday use, you need geometry somewhere between a road car and a race car. This is especially the case where you are using track day rubber or even slicks to maximize grip.

The standard M3 front suspension does not allow for any camber adjustment, but this is required to make full use of such sticky rubber. So a-workx uses its own solid top-mounts that are stronger than standard and allow you to dial in negative camber to help the sticky tyres work properly.

The lower ride height also requires some recalibration of the suspension strut geometry, which again the new top mounts allow. A-workx has its own bespoke settings for ride height, camber and toe and the car is corner balanced with the driver.

As the M3 comes with Michelin Pilot Sport Cup rubber as standard, under the Tuner GP rules, a-workx could use a similar tyre with a different compound. As a race team, it is very familiar with the possible permutations and chose a real dry weather compound with even more grip than the standard M3 Cup tyres.

The 235/35 ZR19 and 265/30 ZR19 Michelins are mounted on 8.5J and 10.0J x 19-inch OZ Racing Ultra Leggera HLT alloys. Although they are cast, at 9.5kg and 10kg each respectively, these wheels are practically as light as forged alloys of the same sizes and save a total of 9.4kg over the standard M3 wheels. For street use, a-workx go with BMW's tyre





pressure recommendations for 19-inch wheels, but for the track, they use 2.1 bar front and 2.3 bar rear, measured with warm tyres.

If BMW's M cars have one weakness, it is their brakes. A-workx addresses this with braided hoses and special brake pads that contain ceramic in their mix to better resist heat. These are perfect for trackdays, and do not squeal in normal road use.

Cars entered in the Tuner GP are modified according to the class in which they are entered. The deciding factor for the tuner on how far to go is down to how competitive the car will be with a particular set of modifications. If a car is not homologated on Cup tyres, then using such sticky rubber puts it into the Open Class where it will likely not be competitive, so a tuner needs to be clear of the rules and confident in knowing where its car will stand.

Ultimately, every component must have the TÜV certification required for road legal status in Germany, and the documentation is checked by Dekra, the Tuner GP's independent scrutineers. Only on that basis is a car accepted as fully road legal, and therefore eligible for entry into the event. The only exception is the Open Class where just about anything goes. On that basis, the a-workx M3 would be considered very lightly modified indeed, even compared to its direct competitors in the Normally-aspirated Saloon Class into which it was entered.

Coming from the factory with 6.2-litres and 457hp, the second-placed Vath C63 AMG benefited from a massive power bump to 575hp with 502lb ft of torque thanks to a tweaked ECU and exhaust. This certainly shades the standard M3's 420hp at 8300rpm and 295lb ft of torque at 3900rpm.

Because Hockenheim's Club Circuit is relatively short and twisty, handling and brakes are further up the list than sheer power. With this in mind, a-workx set out to increase power by a modest amount, but really honed the M3's handling and grip to make full use of the available power.

A-workx is also the German importer for the famous Slovenian exhaust manufacturer, Akrapovic, and supplies its beautifully crafted, super-light titanium exhaust systems for BMW M and Porsche GT models.

The Evolution system for the M3 consists of flow-optimised link pipes with a pair of 100-cell metallic sports catalytic converters, integrated resonators and free-flowing rear silencers. Made entirely from titanium, the system shaves a useful 23kg from the weight of the car and lowers back-pressure by nearly 50 per cent.

Lowering back pressure is particularly useful for gaining power and torque when you have forced

induction, but with a naturally-aspirated engine you have to be very careful as this can actually have a negative impact on output if you go too far. Many hours on the dyno at Akrapovic's facility in Slovenia enabled its engineers to achieve the perfect balance of increased power and torque and a more sporting, bass-rich exhaust note.

The dyno printout registered an increase of 24hp from 2500rpm upwards and 26lb ft of torque all the way through the rev range. The comparative graphs also show that the Akrapovic system helps to smoothen out the dips and troughs in the factory power and torque curves. This is most apparent with both curves between 3500 and 5500rpm, and with the torque curve from 5500 to 6500rpm.

The stock ECU adapts to the lower back-pressure with no remapping required, and this brings outputs up to 444hp with 321lb ft of torque. While these numbers may appear paltry compared with the two tuned C63 AMGs the a-workx M3 faced in the Tuner GP class war, sheer grunt is not everything. The 50/50 weight distribution, better suspension control, and the ability to use almost all of its power more of the time was telling during the timed laps.

A significant contributor to the car's performance was the super fast shifting DCT gearbox that saves around one and a half seconds a lap over the manual at Hockenheim. "The 'box is absolutely superb on track, shifting like greased lightning," said multiple Tuner GP winner and FIA GT Championship driver, Wolfgang Kaufmann, who is a-workx's resident pilot. "Like a proper race car sequential gearbox, it takes away the distraction of a clutch and gearshift, enabling you to fully concentrate on your lap times."

I watched Wolfgang push the M3 right to the edge during his Tuner GP runs. He is a very smooth driver, and even on the limit the car looked so undramatic, I knew he was laying down some blinding lap times.

In past years, a fastest lap was the clincher for a class, or overall win. The major change this year was the averaging of five flying laps, thus putting consistent speed ahead of one stunning lap. Wolfgang's 1 min 12.534 second average and 1 min 12.201 second fastest lap beat the much more powerful Vath C63 AMG, driven by German Clio Cup class winner, Andreas Gulden, which recorded a 1 min 13.056 second average and 1 min 12.801 second best lap respectively. These times even put the a-workx M3 right up with some of the slower turbocharged Porsches!

It was a hot summer day with around 30 degrees C, when we took the performance figures, to the detriment of power output. Even so, our GPS-based

A-workx E92 M3 DCT

ENGINE: V8, 32-valve, 3999cc

MAX POWER: 444hp

MAX TORQUE: 321lb ft

0-62MPH: 4.4 seconds

0-124MPH: 14.6 seconds

MODIFICATIONS:

ENGINE: Standard apart from Akrapovic Evolution

Titanium exhaust

SUSPENSION: KW Clubsport coilovers designed to

a-workx's specification, adjustable for height, bump and rebound; a-workx solid front top mounts

BRAKES: Braided hoses, a-workx pad compound

WHEELS: Oz Racing Ultra Leggera

FRONT: 8.5x19-inch

REAR: 10x19-inch

TYRES: Michelin Pilot Sport Cup

FRONT: 235/35 ZR19

REAR: 265/30 ZR 19



The lower centre of gravity reduces roll noticeably, and in faster bends, the a-workx M3 has insane levels of grip



Who are a-workx?

Entrepreneur and self-made millionaire, Franz Wieth, is a hard-core enthusiast who loves cars and motorsport and his success in business has given him the means to indulge his passion.

In the early 1990s, Franz entered a 348GTB in the German Ferrari Challenge, and his son Niko, joined him shortly afterwards. He founded Wieth Racing in 1999 to prepare customer road and race cars to the highest level.

Niko took over Wieth Racing in 2003, and a-workx was founded in 2006 to address road tuning activities, incorporating Wieth Racing as the motorsport division to look after his own and customer race cars.

Florian Hebel, the Team Manager, had joined the pair the year before, and his past motorsport experience helped tremendously in finding the right people to grow Wieth Racing in the right direction.

"We wanted to take part in the FIA GT Championship at this time, and the most competitive car was the Porsche GT2 (993),"

Florian explained. "We entered a round at Zhuhai in China, and came second in class. This early success spurred Franz to take the team professional."

For Franz, this meant moving up the ladder a rung to GT1 for 2000. And as his first love was for the Ferrari marque, he contemplated building his contender around the V12-engined 550 Maranello. The problem was that no such car existed in late 1999, and the factory was downright hostile to the idea. So Wieth Racing was on its own and out on a limb. Developing the 550 GTS racecar from scratch was no small task and one that would have given a lesser team a terminal headache. In the event, it took a year to ready the car, during which time the Team's Porsche GT2 continued to do well.

One of Wieth Racing's secret weapons is its lead driver, Wolfgang Kaufmann, who started with the company in 2002. Renowned in tuner circles as the multiple winner of the *Sport Auto Tuner GP* for Gumballa, Kaufmann is a regular in the FIA GT Championship and is used to driving big

horsepower turbocharged cars such as the Porsche GT2.

In 2005, Wieth Racing contested the French GT Championship, running the complete season with former DTM driver, Hubert Haupt. It ran in the Euro GT series in 2006 with Kaufmann, winning all the four races entered.

At this point, the Team was already independent of Franz's money, with sponsorship and paying gentleman drivers, but lack of adequate funding saw the team withdraw from the championship at the end of the season. In the midst of this, it ran out of workshop space, and Franz commissioned a turnkey building south of Munich, which the Team moved into in 2005.

Today, a-workx is active in the preparation of customer race cars like Radical, BMW, MINI Challenge, the Porsche Carrera Cup and Porsche Sport Cup. It also prepares client cars for track days and Clubsport events, and tunes road going BMW, Ferrari, MINI and Porsche cars.



Only its lower ride height, OZ Racing alloys and red and blue stripes differentiate the a-workx car from any other white M3



Performance Box showed 0-62mph in 4.4 seconds, and 0-124mph (0-200km/h) in 14.6 seconds. In gear 50-75mph (80-120km/h) times were 2.5 seconds in third gear and 4.0 seconds in fourth.

Wolfgang had proven the a-workx M3's worth on the track, and it was down to me to see just how civilised this class winner is as a daily driver on public roads. Only its 30mm lower ride height, OZ Racing alloys and red and blue stripes differentiate the a-workx car from any other white M3. And apart from a more meaty, bass-laden exhaust note, which leaves a better impression when both occupants and bystanders hear it accelerating away, it starts up and drives around town like a standard car too.

The ride on the 30mm lower KW coil-over suspension is barely firmer than standard thanks to a very well sorted relationship between the uprated springs and dampers, so it retains a good measure of comfort. It is significantly more compliant than the standard C63 AMG on 18-inch wheels, and vastly more compliant than the Performance Package version, which is far too hard for daily road use.

While the increase in power and torque is fairly modest in the overall scheme of things, the slightly crisper throttle response and even greater eagerness to chase down the redline is quite obvious.

I said in the beginning that balance is an M3 strong suit, and it is critical that the balanced relationship between engine, chassis and brakes be maintained. The more familiar I became with the car and the faster I went, the more it was apparent that this equilibrium had indeed been achieved.

The damping comes into its own over 50mph, where the ride starts to really smooth out. But it is when you start to push hard on a twisty road that it really impresses. Once you settle the car into a bend and start to lean on it, you can feel the rock solid control at work. The modest negative camber dialled into the front-end delivers a quicker turn-in, but as the rear toe has been adjusted accordingly, there is no feeling of incipient oversteer.

If anything, both ends of the car track round resolutely until you near the limit whereupon mild

understeer gives way to a four-wheel-drift and then predictable oversteer. The combination of negative camber and sticky tyres means the front-end grip is much improved, and the understeer normally experienced when using a bit too much throttle in a low gear in a tight bend is largely mitigated, so you can throttle up a bit earlier. On track, this makes for a higher exit speed from a bend and valuable fractions of a second gained against the stopwatch.

The different front-end geometry has also improved steering feel. Taking the original E30 M3 as a high point, each generation of M3 after that seems to have added a slight veil to the steering sensitivity. The a-workx settings dial this back a generation, which is a good thing.

The lower centre of gravity reduces roll noticeably, and in faster bends, the a-workx M3 has insane levels of mechanical grip. The relative lack of torque compared to the big 6.2 litre AMG also means that it is harder to unhinge the rear end on good tarmac, especially as the clever electronic rear differential usually has more answers than the fixed ratio Drexler mechanical diff of its rival.

When it does let go, the slide is beautifully telegraphed and easy to catch and hold. The stock M3 is a great drifter, but with less body roll and weight transfer, the a-workx car is even better.

We have had big power, big torque supercharged M3s in these pages of late and they are supercar killers in relatively plain wrapping. But like the supercars themselves, they are too fast for roads that, even in Germany, are becoming slower just through sheer weight of traffic.

If you are after an everyday four-seater that provides sheer driving pleasure on both road and track, a moderately powerful car with crisp throttle response, and a well-balanced chassis the a-workx M3 DCT hits the spot ●

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