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TURBO  
M50 E30**



**STUNNING  
STATIC  
S50 E36**



# PERFORMANCE BMW

THE ULTIMATE MODIFIED BMW MAGAZINE

## E90 M3

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## 505WHP F87 M2

Tyspeed's mind-blowing Pikes  
Peak monster in all its glory







# FAST CLUB

What started out life as a completely standard M2 has been transformed into a full-on race machine and it's a build of epic proportions.

Words: Elizabeth de Latour  
Photos: Larry Chen





You know what? We're not even going to bother with some kind of waffling intro for this feature because just look at this M2, it's awesome and we're too excited about it to waste any time, so let's get stuck in. The owner and builder of this car is one Tyler Pappas and he just so happens to be the owner of Tyspeed, a BMW repair, restoration and tuning shop, and he owns three other BMWs alongside his M2. And he's done all this at only 27, so it's fair to say that Tyler is having a really good time with life right now. The three additional BMWs that

reside in his garage are an interesting selection – there's a 1999 E36 M3 Cab, a 1999 Z3 2.3 and his other project build, a 1972 2800CS. It's fair to say, then, that Tyler loves cars and he really loves BMWs and has done so for a very long time; "I've loved BMWs since the day my mother picked me up from elementary school in the fifth grade, with a 'new' at the time 2001 325Ci Sport package. I immediately found every which way to get under the hood, and frequently took it for test drives without permission (or a license for that matter)," he laughs. "They are overbuilt from the factory and drive like nothing

else on the road. It's nearly impossible to frown driving one, and even harder to do so when racing one. I also enjoy the shared passion of other BMW enthusiasts, and how 'just a car' can bring large groups together," he smiles and if we weren't already BMW lovers, we definitely would be after hearing that.

So with this passion building up within him, it is unsurprising to learn that his first-ever car was a BM, and he wasted no time with the mods; "My first BMW was a 1986 E30 325es, which I promptly researched and performed an S50 swap on. This was at a time when the swaps





Aero setup looks awesome

**“ We sourced a BMW M factory racing carbon centre console and foot box and installed a KMP Drivetrain racing paddle wheel with custom controls and the Tyspeed logo right in the centre ”**

weren't as common, and the parts were readily available and reasonably priced,” which makes that one hell of a first car. So where do you go from there? Well, you buy more BMs and mod them all of course; “Previous to this car, I built a SPEC E46, which is another BMW racing car. It was less exciting, but still very much fun to drive. We did a few endurance races with it including a 12 hour, which we won, and various BMW CCA sprint races across the country. I've modified or burnt down nearly every BMW I've ever owned,” he grins and that's one hell of a legacy.

That a young BMW-loving petrolhead like Tyler has ended up with an M2 is no surprise – with its chunky arches, aggressive styling and factory breathed-on N55 under the bonnet, it's an awesome little machine, one that confidently picked up the torch from the 1M and ran with it, and it's a car we and just about any

other BM fan would have in a heartbeat. “I bought the M2 off a showroom floor in November of 2017. It was a gift to myself as the business I had started was doing quite well, and I needed a new daily driver,” he explains. “I had always had a crush on the M2, and after driving a few decided that I for sure needed one in my life! It was a one-year-old trade-in at a Porsche Dealer in PA, and on a whim I went down on a Saturday to test drive it. It was listed as a manual but was in actuality a DCT. Not wanting to pass up the opportunity, I gave it a test drive and was immediately in love with the ferocity of the shifting, and really just wanted to drive it home that day. This ended up being an okay compromise, as the seven-speed DCT is an advantage on track! I had no real ideas of turning it into what you see now until we started messing with it at the shop,” he says. Now, modding the car

was a given, but as Tyler says there were no plans to take it this far and it's gone very far indeed – you have to remember that this started out as a completely stock car and it's changed so much that it barely even resembles an M2 any more. “I originally planned on doing OEM+, with some seats, wheels, a tune, and bolt-ons,” he explains. “It escalated very quickly when one of the first projects we ended up doing was adding a carbon roof. All that work for only 11lbs, it was disappointing in terms of weight savings but boy did it look good!” he laughs and from there things just snowballed.

“The car was built in two stages,” Tyler explains. “The winter of 2018 saw a cage, and the first slew of wiring, safety, and chassis modifications. We ran it in accordance with the BMW CCA B-Mod rules, and it was built to that specification. In the winter of 2019, we stripped it back down and rebuilt it to Pikes Peak Time Attack 1 Class, which required heavy modifications in terms of safety, and performance. We added full aero, 100hp and 150 lb ft of torque, a safety cell, and several cage improvements. A new, safer seat was installed, and further development of the electronics was done,” and it's this raft of mods that transformed it into the beast you see before you and

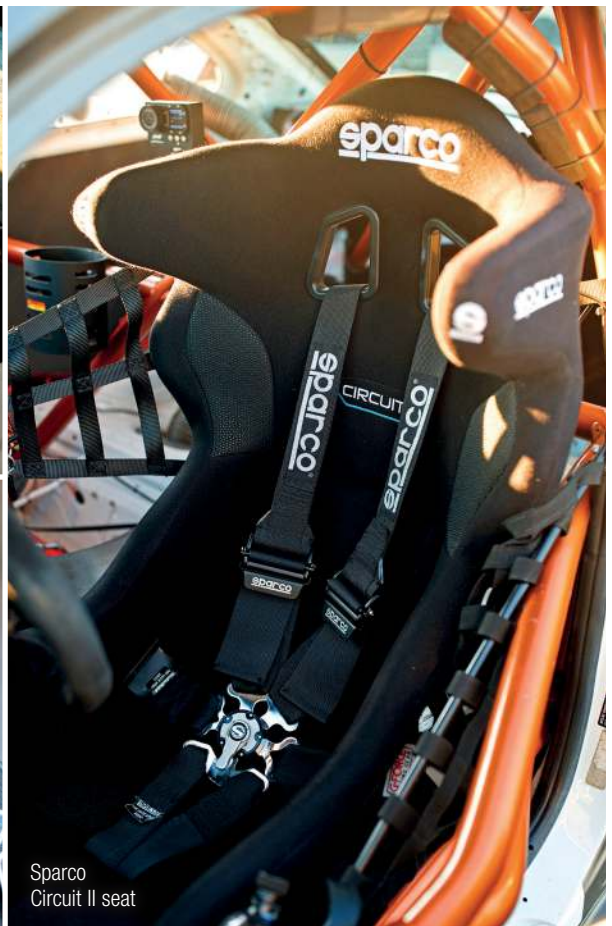




KMP Drivetrain steering wheel



Interior features a custom race dash



Sparco Circuit II seat



AEM water/meth injection controller



## Pikes Peak F87 M2

### ENGINE AND TRANSMISSION

3.0-litre turbo straight-six N55B30T0, CP standard size/compression forged pistons, Carrillo connecting rods, ARP hardware, ARP studded block M11x1.5, HeadGames Motorworks ported cylinder head, CSF Racing four-piece cooling kit including triple-pass racing radiator, stepped intercooler, Boss 275ci oil cooler and dual-pass DCT cooler, dual auxiliary radiators with boost pump, air-con system removed and coded out, Pure Turbos Stage 2+ turbocharger, VRSF two-piece charge pipe & stainless downpipe, custom-fabricated 3" oval exhaust, Burger Tuning catch can and oil cooler bypass valve, water/meth injection system with pre- and post-intercooler sprayers, Pyrotec 15-gallon fuel cell, Walbro 450lph in-tank pump, dry break filling system, XDI 35l high-pressure fuel pump from TTFS, custom tuning by Tuning Tech by Frank Smith for VP MS109 fuel. M DCT seven-speed gearbox, uprated cooler, GTS transmission and rear differential flash

### POWER AND TORQUE

505whp and 540lb ft wtq

### CHASSIS

10.5x18" ET40 (front and rear) APEX FL-5 wheels in Race Silver with 295/35 (front and rear) Toyo Proxes RR (DOT compound) tyres, Bimmerworld Premium Race Stud Kit, JRZ RS-PRO two-way remote reservoir adjustable coilovers with 1000lb (front) and 1200lb (rear) springs, Ground Control articulating rear spring perches and adjustable front camber plates, Fall-Line Motorsports spherical front LCA bushes and adjustable rear toe arms, SPL Parts front lower control arms, front bump steer adjusted tie rods and rear trailing arm kit, Powerflex Black Series poly rear differential mount bush set, all factory rubber suspension bushes replaced with polyurethane/spherical items, Dinan upgraded anti-roll bar kit front and rear with custom end links, StopTech STR-60 BBK with fully forged six-piston calipers and 380mm discs (front) and fully forged four-piston calipers and 380mm discs (rear), custom brake ducting kit, StopTech stainless brake lines, performance DSC/ABS coding, GTS EPS steering flash

### EXTERIOR

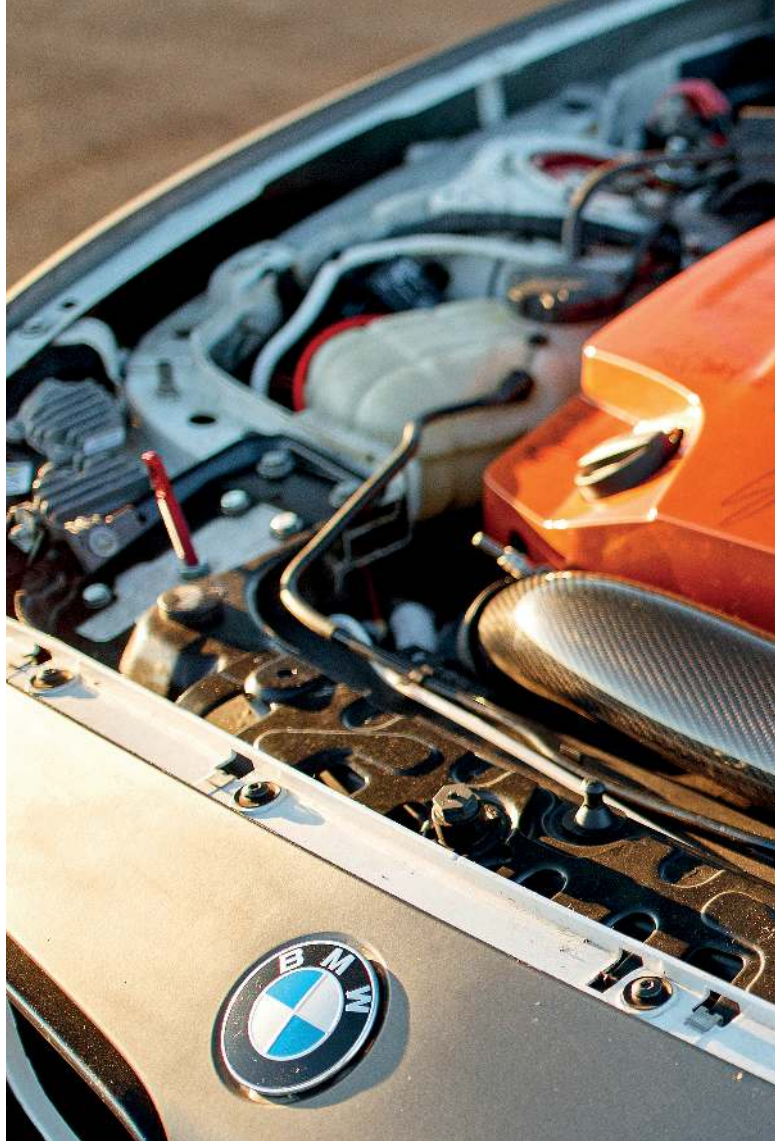
Tyspeed composite doors, bonnet and boot lid assembly with factory mounting, AJ Hartman Aero C5 Corvette front canards (custom cut), RKP Carbon GP front lip with AJ Hartman Aero custom splitter with tunnels, RKP Carbon 2x2 roof from IND Distribution, SPA Techniques door mirrors, Lexan side windows, AJ Hartman Aero Apex 12 dual-element rear wing with custom CNC 7075 aluminium machined swan neck uprights, dual-stage rear diffuser system, AJ Hartman Aero flat floor panel

### INTERIOR

Completely stripped, Club Race-spec roll-cage fabricated in-house, M235iR carbon floor pan inserts and one-piece centre console, custom carbon door panels, rear bulkhead and interior trims, 13 ECUs removed, wiring harness thinned, operational iDrive, Drive Dynamics and functional HVAC/defrost, Sparco Circuit II seat, Sparco Clubsport belts, KMP Drivetrain F8x paddle shift wheel with quick release and DSC buttons, AIM MXG data system with SmartyCam HD from Krause + Associates, beta F8x protocol for CAN bus, Longacre wide rear-view mirror, Motorola Digital Long Track radio communication system, SPA Techniques on-board fire suppression system

### THANKS

I have a few people to thank – first off my good friend and previous colleague Drew Kessler, who did a lot of the initial fabrication work including the cage, Ravi and Ken at CSF for sticking with me and supporting my efforts all over the country, Ryan and Brian at APEX Race Parts, who have always believed in my efforts and done their best to support them, Brad and Erik From StopTech brakes, the guys at Toyo Tires for a great 2019 season and great tires, the guys at Tyspeed (Jeff Weber, for his work and service on the car, and Jeff Brennan for keeping the shop going while I was out campaigning this thing), the guys at AutoCouture Motoring for some initial parts connections, as well as constantly telling me this was a bad idea (which just pushed me further off the deep end), and many others I've worked with directly to build this car, and those who have made an effort to come up and talk to me about it at the various events in 2018/2019. It's been a heck of a ride, and I could not be more proud of what we've accomplished with this thing for being a super-small team!

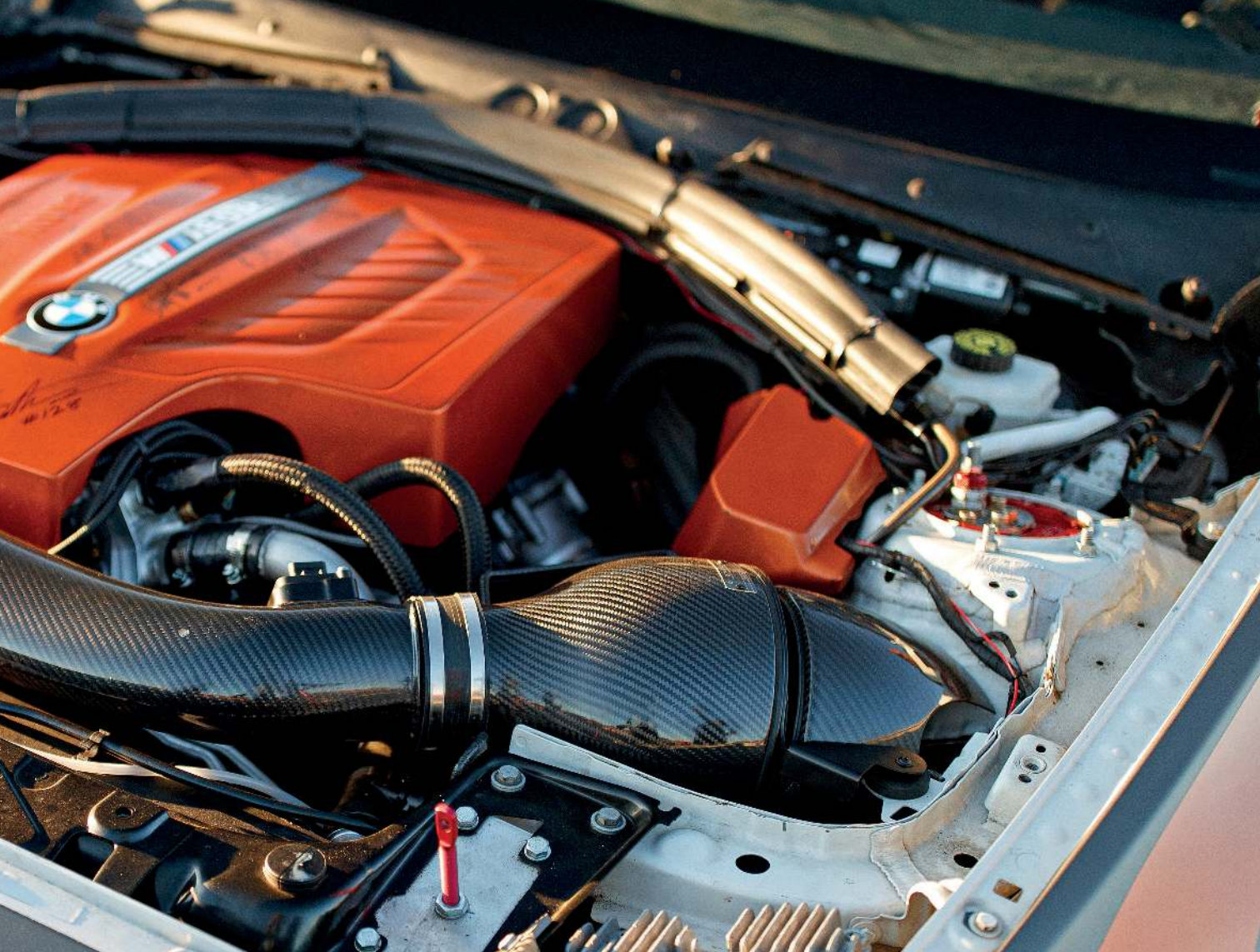


Engine cover has been signed by numerous 97th Pikes Peak drivers



JRZ RS remote reservoir coilovers and Ground Control camber plates





which ensured it was in the spotlight at last year's SEMA show.

So much work has gone into this car that it's hard to know where to start but it's the looks of the thing that blow your mind when you first set eyes on it, and while Tyler had to follow the required rules with this build because it is a full-on race car, there was still room for manoeuvre when it came to adding his own personal touches on the car. "I worked together with a company called Peel'd Raw Designs. We went back and forth a few times on the styling, and eventually he produced a digital version of what you see, which we had the wrap specialist at CSL Designs (near me in NJ) install on the car. Finally, we properly specced-out and installed all the monochromatic sponsor decals in an appropriate fashion, and tried to make it as easy on the eyes as possible. The aero bits added their own style, and the rest of it is just pure race. I think we've blended the line nicely between show/race!" he says and we're with him there. The car looks absolutely spectacular, 100% pure race car but one that gets all the attention wherever

**“ There's an Eventuri carbon intake, a Pure Turbos Stage 2+ turbo that provides the muscle, a VRSF downpipe and a two-piece VRSF charge pipe that feeds all that turbocharged air to the engine ”**

it goes. To get the car's weight down, it's been fitted with Tyspeed composite doors, bonnet and boot lid assembly, Lexan windows have been installed and then there's that RKP Carbon 2x2 roof. Up front sits an RKP Carbon GP lip with AJ Hartman Aero custom splitters and C5 Corvette front canards that have been custom cut to fit the M2's bumper. There are tiny SPA Techniques door mirrors while the rear view is dominated by that absolutely vast AJ Hartman Apex 12 dual-element rear wing with custom-machined aluminium swan neck uprights and the equally huge dual-stage diffuser system and flat floor panel. It's an imposing, intimidating machine to behold whether

it's out on track or just parked up and it's simply awesome.

A pure racing machine requires a serious chassis setup and that's exactly what this M2 boasts; "We built the cage and other chassis modifications around the Pikes Peak rule book for the Time Attack 1 Class. Suspension modifications include JRZ RS Pro two-way coilovers with remote reservoirs and Ground Control mountings. SPL supplied fully tubular/adjustable heim end control arms and tie-rods and all rubber bits have been replaced with spherical bearings or polyurethane," says Tyler. In addition to that, there are Fall-Line Motorsports spherical front LCA bushes and adjustable rear toe arms and



Dinan upgraded anti-roll bars front and rear with custom end links, and then we come to the brakes. Obviously, a build like this needs some serious stopping power and the StopTech setup that Tyler has fitted delivers exactly that: fully forged calipers have been fitted all-round with six-pots up front and four-pots at the rear and they're mated to 380mm discs, there's a custom brake ducting kit, StopTech braided brake lines and performance ABS coding, and it all combines to deliver serious braking performance.

A track car also needs a set of wheels that will be able to cope with the rigours of circuit work and for Tyler the choice was obvious; "For me, there was only one choice for race-proven wheels, and that was APEX. We have since run many different styles but have always loved these silver FL-5 wheels you see on the car here. I have now moved on to their new Forged ARC8-R, which was just released. We'll be running that set full-time in 2020. The wheels are super-lightweight plus strong and cost-effective for track use. They also provide a lot of neat features most race wheels miss out on like knurled beading and machined mounting faces/recesses for lugs," he says plus every set of wheels APEX makes looks great, which

is equally important. Tyler is running a 10.5x18" square setup and the FL-5s are wrapped in 295/35 Toyo Proxes RR track rubber for maximum adhesion.

So you've got your race M2, it's got all the aero and has shed a few pounds, the chassis is sorted, the brakes are massive but you need some serious power to go with all that and the N55 that sits beneath the bonnet here is making plenty of the good stuff. "Originally in 2018 we ran the motor stock, with bolt-ons. After an accidental overheat in pre-season testing in 2019, we rebuilt the engine using CP pistons and Carrillo rods sourced from VAC Motorsports, as well as ARP hardware throughout, a mild port job on the head, and some other tricks to the cooling system. The motor can withstand 700hp+, which we intend to run it at for the 2020 Pikes Peak Hill Climb," says Tyler. "The entire cooling system has been upgraded with a slew of CSF Radiators' products, some drop-in fit and others from their universal line. All in, we've developed a serious combination of pumps, line routing and coolers to keep this car cool on track in high ambient temps, high altitudes, you name it! We run the car for upwards of 40 minutes sometimes, which is really difficult to do with this much power!

We run meth injection both for charge air cooling and anti-detonation, and are running MS109 Race gas through an XDI high-pressure fuel pump and tuning was done by Frank Smith from TTFS," he tells us and that is a seriously comprehensive selection of engine mods that have turned this N55 into an absolute monster. But wait, we're not done yet – while the block and head work contribute heavily to the engine's overall power output and its total power capability, there are a few more key members of the performance cast that all play an important part. There's an Eventuri carbon intake, a Pure Turbos Stage 2+ turbo that provides the muscle, a VRSF downpipe and a two-piece VRSF charge pipe that feeds all that turbocharged air to the engine and these elements, along with all the aforementioned mods, add up to 505whp and 540lb ft of torque, which is a lot whichever way you look at it but in a stripped-out, lightweight machine like this it makes for serious performance.

Now we move to the interior and, as with the rest of the car, it's obviously been put together following the racing rule book but a huge amount of work has gone into the cabin and it looks spectacular. "Interior cleanliness on a race car is always a big talking point for me. I hate seeing messes

“The rear view is dominated by that **absolutely vast AJ Hartman Apex 12 dual-element rear wing** with custom-machined aluminium swan neck uprights and the **equally huge dual-stage diffuser system** and flat floor panel”







Boot houses fuel setup with dry break filling system



Lightweight APEX FL-5 wheels and massive StopTech brakes







It would be rude  
not to have some fun  
with 505whp on tap...

of wires/hoses and equipment inside. Because this is kind of inevitable when there is no interior to hide all of it, I went to great lengths to cover up as much as I could, and to tidy up what I couldn't hide," explains Tyler. "We sourced a BMW M factory racing carbon centre console and foot box and installed a KMP Drivetrain racing paddle wheel with custom controls and the Tyspeed logo right in the centre, which is a nice touch. In 2018 we ran a different seat, without head protection, and when I was approached by fellow racers regarding its safety I switched it for a new 2020 Sparco full-containment race seat. We then mounted it as low as possible by bolting it right to the floor and then, as a result, I could not see over the factory dash. This then called for an unexpected project of the fabrication of a race dash – which I took in full stride," he grins. "Making templates in cardboard first, and then converting to aluminium, I riveted it all together and then took it over to my buddy John at NineStitch NY who custom-wrapped and stitched it in Alcantara with orange stitching and again incorporated my logo! Finishing that off is a custom set of simplified controls for the electrics, and an AiM MXG data-logger system with full data!" and that's an astonishing amount of work and it adds up to one astonishingly good cabin. The Club Race-spec roll-cage has been fabricated in-house at Tyspeed, there are custom

carbon door panels, rear bulkhead and interior trims, the car's 13 ECUs have been removed and the wiring harness has been thinned-out to save even more weight, and then in the boot you'll find the fuel setup with a Pyroprotect 15-gallon fuel cell with a Walbro 450lph in-tank pump and a dry break filling system.

This M2 is an incredible machine – it looks wild, it can rival any show car for finish and quality, and it also happens to be a full-on race car. It's an awesome achievement and it's actually hard to believe that this was once a completely standard road car – Tyler and everyone involved in this project have absolutely outdone themselves. Perhaps even more impressive than the end result is the time taken to build the car; "Phase one was completed in six months, and the second phase took about five. We were doing this on off-shop time hours and developing the car at the track on the weekends. I've had a lot of help building and maintaining it from a few devoted guys, but have done a lot of the design and heavy lifting, as well as racing, on my own. I think end to end, knowing what we know now, we could replicate this car in just a few months of work," he adds, which is good to know if you fancy having something like this for yourself...

This car has been built with no compromise and it's a machine brimming with nothing but the best components

wherever you look. "Choosing my favourite modification is a tough call, but I love the cockpit," says Tyler with a smile. "Everything about it was built around me, for both safety and comfort. I think for such a modern car with a tonne of wiring and computers, we did a bang-up job keeping it clean and incorporating a multitude of small design touches which produce the overall result you are looking at. There's just something about sitting down in this car, pressing the switches and letting it breathe to life with the 500hp+ in-line-six. The car, being several hundred pounds less than the original, is extremely athletic and goes like a bat out of hell on track," he adds with a grin. And, complete as the car may seem, Tyler's brain is always thinking about the next modifications: "If I don't put it up for sale, we'll be adding a bigger turbocharger system, custom race intercooler, different coilover system and tweaking the brakes some more. We've worked hard with StopTech to develop just the right combination here for this car in its environment and I think we're close to having exactly what we need. All these companies that have helped us have stuck their neck out for me, and we've continually pushed their products for this platform to the limit, learning all along the way!" he exclaims but with this M2 being the end result of that learning process it puts Tyler top of the fast class ●