



IT IS NO surprise that the bulk of Audi's S and RS cars are sold as Avant models. After all, what better car for a man to satisfy both the needs of his family and the need for speed?

Fast is always relative however, and despite having 420 bhp and 430 Nm of torque, the new RS4 may not be enough for some. Until such time as the tuners get to work on it, this is as much power as you will get out of a standard model.

As the high-revving, normally-aspirated RS4 begins its journey to the showrooms, MTM's supercharged S4 K500 is gunning for its blood. And judging by the inspiring drive we had in this 500 PS monster, it has the measure of the RS4 and more.

With 500 PS at 6,750 rpm and 580 Nm of torque at 3,750 rpm, the MTM S4 K500 is the perfect solution for S4 fans who want to maintain

performance one-upmanship over the newer, more expensive RS4. Until MTM supercharge the new car, of course!

The concept of an RS4 basher never really occurred to MTM's Roland Mayer when he was working on the supercharger conversion in early 2004. It came about through the need to give the new Audi A8 the edge against the Mercedes S600L and the BMW 760Li. Although the W12-powered A8 has joined the fold in the interim, there is still call for such conversions from owners of older cars.

Of course, one of the advantages of major manufacturers using the same or a similar engine across their range is that any tuner's performance enhancements will be applicable across the board. So the supercharger kit which was originally developed to keep Audi's flagship model at the top of the

tree can be used to turn the smaller cars into weapons-grade material.

"Apart from boosting power and torque of the A8 4.2, the original idea was to develop a bolt-on conversion which we could happily export to our dealers around the world," MTM boss Roland Mayer explained. "Because of this it was important that internal engine work was not required, so boost pressure is very low, in the order of 0.45 bar."

The relatively compact supercharger comes from Mercedes tuner, Kleemann in Denmark and is made to their specifications by AutoRotor in Sweden. This is a twin-screw positive displacement unit with very low internal friction, as we realised when we easily spun the drive pulley by hand. That low friction means that it only heats up to about 100°C, 30° less than rival designs.

# MTM S4 K500

**Ian Kuah** has been finding out what happens when MTM applies supercharger technology to the S4

Effective forced induction is all about charge air temperature. The cooler the air you can get to the inlet manifold, the more power you can achieve. The problem up to now is that although superchargers do not produce as much heat as turbochargers, it is still too much.

“Once you have too much heat at the air intake, you have a cascade effect through the whole engine,” Roland explained. “You have to have a lower compression ratio to avoid detonation, but this blunts throttle response. Then you have to run higher boost to get the power and torque, but the higher the boost, the more heat you get and the

closer you run to detonation. It all goes round in a vicious circle.”

“The secret is cool air and low boost,” he continued. “Thermal stress puts a limit on reliability, so Kleemann approached heat as the root of all problems. With this in mind, they set out to develop a special intercooler system which would effectively reduce the temperature at the supercharger’s output from 100° to no more than 25 or 30°C above ambient air temperature at the inlet manifold.”

This design allows the stock compression ratio to be retained, cutting out a lot of expensive internal

engine work. It also means that the conversion is easily reversible should you decide to sell the car in standard form.” The results speak for themselves and there are dozens of Kleemann-modified Mercedes running around in Germany with over 50,000 problem-free kilometres on the clock.

The innovative intercooler which does the trick comes from Laminova, another Swedish engineering firm, and is mounted between the supercharger and its manifold. This water-cooled intercooler is so efficient that, at full power, it can dissipate nearly twice as much heat from the charge air as the



comparable IHI unit used by Mercedes on the supercharged AMG cars.

Because of this, the nett horsepower gain is higher and achieved on relatively lower boost pressure because the stock compression ratio can be retained. The 485 PS Kleemann SL500 uses just 0.45 bar of boost compared to 0.8 bar on the 500 PS SL55 AMG, and does not require the engine to be fitted with low compression pistons. This is important so that aftermarket conversion costs are reasonable.

The S4's supercharger installation uses a separate closed loop cooling system with pump, independent of the engine's own system, and this has its own smaller radiator in the nose.

The exhaust gases find an easier path out through 200 cell metal sport catalysts which reduce backpressure and enhance the rolling thunder exhaust note of the deep growling bent-crank V8 engine. The stainless steel exhaust normally ends in four big round polished pipes at the rear, but the

owner of this car wanted to keep the stock oval tailpipes.

In weight terms, the MTM S4 K500 tips the scales at around 1,800 kg. Not as light as we would like perhaps, but then there is now a significant 166 PS and 170 Nm of extra thrust. Thanks to its superb 4WD traction, against the stopwatch, the K500 digs in and blasts to 100 kph (62 mph) in just 4.6 sec, passing 200 kph in 15.0 sec on the way to its delimited 300 kph top speed.

More importantly for everyday driving, the K500 feels really beefy everywhere in the rev band thanks to that massive torque enhancement. A standard S4 is a quick car, but with an engine in standard tune, it is best described as smooth and progressive.

The MTM S4 K500, on the other hand, delivers serious grunt throughout the rev range. When you get on the throttle, the V8 growl deepens and a big hand pushes you in the back, rapidly ramping up velocity with seemingly little effort. The best thing is that it is

so linear, with no lag and none of the abruptness that you sometimes get with turbocharging. The Kleemann supercharger is also very quiet, so there are none of the 'boiling kettle' noises you get with some lesser units.

Thanks to the quattro 4WD system, all this power and torque has no problem finding its way to the tarmac. On the way out of bends, we could apply the power fairly early for the kind of slingshot exit rear-driven cars with this number of horses can only dream of and the engine just keeps on pulling hard down the straights.

Although the engine is almost identical to the installation in the A8 we drove last year, the application in a smaller more agile car, albeit one of similar weight, makes a huge difference to driving fun.

On the country roads around MTM's Wettstetten HQ, the more compact S4 was really chuckable and it ate up the curves with room to spare. Straight-lining the more open bends on full throttle comes naturally and



the car's sheer pace across country was simply astounding.

The uprated suspension, brakes and wheel/tyre combination has a lot to do with this fine balance of driving qualities. MTM's uprated spring and damper kit drops the ride height by 25mm and removes the last vestiges of float from the car's high-speed handling when you are really tanking on.

MTM uses its 380 x 34mm vented discs with eight-pot callipers in front to effectively stop the charge of this 500 PS machine. Since most of the stopping effort is looked after by the front brakes, the rears are standard. The lovely alloy wheels are MTM's Bimoto design. 8.5J x 19-inch all round, shod with 245/35ZR19 Dunlop Sport Maxx tyres.

A standard S4 is an efficient rather than very involving car. The MTM K500 is sharper witted in the chassis and braking departments and also feels a bit chunkier through the steering. It balances out the sheer forward



thrust pretty well and has a great V8 soundtrack. When all is said and done, it is a dramatically fast fun machine with supercar performance and estate car practicality.

With its bigger wheel arches, and more aggressive nose job, an Audi

RS4 will never be a stealth machine, something the more subtle S4 Avant, especially in a dark colour, can pull off. Remove the S4 badges and put 1.9TDI ones in their place and you would have a great supercar-killing 500 PS Q-car. The idea appeals greatly! 🇧🇪

**'Against the stopwatch, the K500 digs in and blasts to 100 kph (62 mph) in just 4.6 sec, passing 200 kph in 15.0 sec...'**

