

# Red star

# RISING

What do you do with the most extreme C-Class built by Mercedes-Benz? You give it a Kleemann supercharger, of course, in the process achieving around 700bhp

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TUNER CAR  
Kleemann  
C63 AMG Coupe Black Series

WITH ITS 6,208CC DISPLACEMENT, STEEL CRANK, 32 valves and DOHC per cylinder bank, AMG's high revving, naturally aspirated M156 V8 was born to run, making big horsepower and torque in the process. Tuned for outputs from 451 to 518bhp across a range of AMG models, it was the stalwart powerplant for the high performance division of Mercedes-Benz

between 2007 and 2010, remaining in production for the C63 AMG into 2014.

However, even before the 5.5-litre M157 V8 biturbo was launched in the summer of 2010, we knew the writing was on the wall for the first ever AMG engine designed completely in house. With ever tightening emission laws on the horizon, it was clear by 2009 that the thirsty M156 V8 was not long for this world. In any case, in terms of power, torque, emissions, economy and even aftermarket tuning potential, the M157 motor was born with a head start in life.

That said, when he was development chief at the time, AMG's current CEO, Tobias Moers, told me that the crisp throttle response and high revving character of this naturally aspirated motor was a big part of the C63 AMG's persona. The same goes for the SLS AMG, which boasts a more powerful M159 version of the M156 V8.

Kleemann's most potent M156 V8 upgrade includes this supercharger and exhaust system.



## A SPECIAL DANISH RECIPE

With early pre owned C63 AMGs now relatively affordable, the temptation to buy a good, low mileage car and go for broke with one of the aftermarket tuning options could be overwhelming for a hard core AMG addict. The Swedish owner of this C63 AMG Coupe Black Series bought the car in 2013 and soon got used to its performance. Craving even more, he drove it across the border to Farum in Denmark, home of aftermarket supercharger specialist Kleemann.

As we have seen before, Kleemann's conventional tuning with exhaust and ECU upgrades can extract up to 542bhp and 465lb ft of torque from the M156 motor. But if you are so power hungry that you absolutely must have a tyre melting 699bhp, accompanied by over 600lb ft of torque, then forced aspiration is the only tuning solution that will deliver the goods.

Out of the box, the C63 AMG Coupe Black Series motor makes 510bhp and 457lb ft of torque thanks to a series of key upgrades, starting with the forged pistons, connecting rods and crankshaft from the SLS



▷ AMG's M159 motor. The C63 Black Series V8 also adopts the SLS based oil cooling system that has a 50 per cent greater capacity than the standard M156, to ensure durability during hard track use, and the ECU mapping is specific to this car.

With the Black Series bodywork and chassis left absolutely standard, the Kleemann modifications centre on the M156 motor. As the C-Class's engine bay is far smaller than the SLS's, heat management is an issue with forced aspiration, so the fact that the Kleemann supercharger installation was designed to run with a modest boost pressure of 0.5bar is a decided advantage.

We know from past experience that Kleemann's liquid intercooled supercharger conversion is one of the very best out there. Designed for very high efficiency, the core of latest system is the highly regarded Magnuson MP2300 TVS (Twin Vortices Series) supercharger, which uses Eaton's sixth generation rotor technology. This supercharger has lower internal friction and runs cooler than twin-screw designs from rival manufacturers.

"Effective forced aspiration is all about charge air temperature," explained Claus Ankjær, Kleemann's CEO and Technical Director. "The cooler the air you can get at the inlet manifold, the more power you can achieve. Once you have too much heat at the air intake, you have a cascade effect through the whole engine. You can lower the compression ratio to avoid detonation, but this blunts throttle response, so you then have to run higher boost to get the power and torque. However, the higher the boost, the more heat you get, and the closer you run to detonation. It's a vicious circle."

#### RELIABILITY THROUGH EXTREME COOLING

"The secret is cool air and low boost," Claus continued. "Thermal stress puts a limit on reliability, so we approach heat as the root of all problems." Kleemann's intercooler is so efficient that at full power, it can dissipate considerably more heat from the charge air than most rival systems. Because of this, the net horsepower gain is significantly higher, and is achievable on significantly lower boost pressure, with less thermal stress on the engine.

Rather than simply bolting on a supercharger kit and remapping the ECU, Kleemann also offers the possibility of further spicing up the conversion with long tube headers, 200-cell free flow catalysts, and a big bore sports exhaust.

Reducing back pressure is a good thing for any engine, but especially so for one fed by forced aspiration. The exhaust headers alone enable the motor to pick up an extra 25bhp with more torque, and they also add to the soundtrack.

With its more muscular stance and meaner visage based around extended front and rear wheelarches covering wider 19-inch wheels at the end of tracks widened by 40mm in front and 79mm at the rear, the C63 AMG Coupe Black Series looks dressed for combat.

Apart from the wider arches, the other factory changes to the bodywork are a new front bumper with massive air intakes and front splitter, side skirts with carbon fibre strakes, a rear bumper with large underbody diffuser and cut outs for the four polished exhaust outlets. A small carbon fibre spoiler sits on the trailing edge of the bootlid. The bonnet is new as well, and features a pair of outlets in the centre of its bulge to help extract hot air from the engine bay.

Hidden by this bulge from the side, they are most apparent when you stand directly in front of the car.

Under the skin, AMG made a significant break from the standard C63 AMG suspension using a

▷△ The first Black Series AMG came in 2006.

▷ A louder and fuller note for an already fruity V8.

“At the core of Kleemann's latest system is the highly regarded Magnuson MP2300 TVS supercharger”



#### JUST THE FACTS

##### Kleemann C63 AMG Coupe Black Series (C204)

ENGINE M156 6,208cc V8 supercharged

POWER 699bhp@6,300rpm

TORQUE 671lb ft@4,400rpm

TRANSMISSION 7-speed auto, RWD

WEIGHT 1,710kg

0-62MPH 3.6sec

TOP SPEED 186mph

FUEL CONSUMPTION 23.2mpg

CO2 emissions 286g/km

YEARS PRODUCED 2012-on

#### OVERVIEW

The Black Series version of the C63 AMG is arguably the ultimate compact coupe, and Kleemann's supercharger kit only makes the Mercedes-Benz more ballistic

Figures provided by Kleemann, except weight which is for a standard C63 AMG Coupe Black Series; fuel consumption according to NEDC combined; top speed is limited for TÜV approval - the car's true top speed is 205mph plus



△ Microfibre trim and AMG helm/seats.



△ Kleemann will celebrate its 30th birthday in 2015.

▷ The twin-screw supercharger sits in the engine's V.







“The brutal onslaught of this much torque makes it easy to break traction at almost any point from rest to 90mph on a dry road!”

▷ bespoke, adjustable coil-over system made by KW. This has a 15mm adjustment range, but unlike authentic race suspension, it uses linear rate coil springs with no helper springs. To maximise the performance of the updated suspension components, the geometry has been tweaked with very slightly more negative camber at all four corners of the car.

The Drexler limited-slip differential is not the same as in other AMG Mercedes, and features a 60 per cent locking action under acceleration, and a 50 per cent locking on the overrun. It is more like a competition diff in operation, and requires a very precise suspension set up to work properly.

#### PURE THEATRE

Where the standard C63 AMG starts with a loud V8 bark and then idles with a low growl, the Kleemann tuned car idles with a more menacing grumble as the spent gases are extracted from the exhaust ports through the bigger bore stainless steel pipes. Blipping the throttle elicits a much sharper and louder bark from the exhaust, whose rear section is not Kleemann in this case, rather a Swedish system fitted by the owner who is from there.

As the Kleemann supercharger system runs on low boost of around 0.5bar, there is no need to fit low compression pistons. Thus, the inherent torque and responsiveness of the factory motor remain unscathed, and you are treated to an instant and much more assertive shove in the back as the revs climb. On full boost, the bhp count rises from 510 to 699bhp at 6,300rpm, with torque up from 457 to 671lb ft at 4,400rpm. The extent of the raw thrust that this can translate to the tarmac is always governed by available traction.

The car sits on factory 10-spoke wheels of the same design as the SLS's optional forged wheels. They are size 9.0Jx19 up front and 9.5Jx19 at the rear, and shod with 255/35ZR19 and 285/30ZR19 Continental SportContact 5

tyres. However, even with the help of the diff, the wide rubber is simply no match for this level of power if you are indiscrete with the throttle. The brutal onslaught of this much torque makes it easy to break traction at almost any point from rest to 90mph on a dry road!



△ Lightweight alloys like those on the SLS AMG.

◁ Kleemann's Claus Ankjær discussed heat.



△ A dyno test rated this C63 at 699bhp with 671lb ft torque.

Kleemann says that the supercharger, intercooler and the associated pipework add around 30kg to the nose, but on the fast cross-country route I chose for the test drive, the C63 Black Series's handling was not discernibly affected by this weight increase above the front axle. If anything, there is now so much more grunt on tap that even using the slow in, fast out approach to corners, oversteer rather than understeer will always be your primary concern.

With the AMG Speedshift MCT seven-speed gearbox in Manual mode and the three-stage ESP loosened off to Sport Handling mode, I could not resist leaning on the limited-slip differential to indulge in some tail out antics on open roads with good visibility. Take it from me that this is an effortless drift machine, and be prepared to buy shares in your local tyre shop!

#### TAIL GUNNER

In normal driving, the trick is to be super smooth and let the monumental wave of torque do the work for you. Thanks to the seven closely spaced gear ratios and this twisting force, you can

drive everywhere at least one, if not two gear ratios higher than normal. On that score, fuel economy should be no worse than standard (23.2mpg NEDC combined) on part throttle.

The stock C63 AMG Coupe Black Series is already a very quick car, but with the Kleemann supercharger conversion installed, overall performance is potentially in the realm of major league supercars. Where the standard C63 Black is a finely balanced act, the Kleemann conversion shifts the focus more towards its killer motor. Now, the one thing I really want for this steroid laden machine is four-wheel drive so that I can use all of its brutal power all of the time.