

Hartge/Performance Plus BMW 325e

Making eta better.

The word "eta" is Greek to most folks, but some Bimmer fans have learned to regard it as a four-letter word. The eta concept is BMW's method of achieving high torque at low rpm, and for the increasing number of BMW owners who don't know or care how many cylinders are at work under their hoods, it is an effect a silent supercharger: the extra low-speed punch helps launch the 3-series sedan from a stoplight with authority, and never mind the clutch slipping and tach watching. The downside is that the upper register of the rev range is missing. Anyone inclined to plant a foot deep in the throttle and leave it there as long as it feels good will quickly find that the BMW 325e trips all over itself at 5000 rpm. A rev limiter in the Motronic control computer abruptly shuts the engine down early to keep it from hurting itself.

Of course, the aftermarket isn't about to be stymied by BMW's eta engine. Performance Plus of Dania, Florida, working in cooperation with the German tuner Hartge Motorsport, has put together a cylinder-head kit designed to make life with eta more livable. When we expressed interest in the package, Performance Plus was kind enough to send us the kit with a complete BMW 325 wrapped around it, and a few dress-up and chassis tweaks thrown into the bargain.

BMW manufactures the kit head for European 323i models, and Hartge modifies it in several ways for the 325e application. The ports are polished, and the compression ratio is raised to 9.8:1 by a milling operation. The kit also includes special valves that are lighter and slightly larger in diameter (by 1mm) than the valves used in the normal 325e head, and a camshaft with extra duration and lift. (The head comes assembled, and all the gaskets necessary for its installation are included in the kit.) According to Hartge's dynamometer, the net gain is 29 horsepower and four pounds-feet of torque, with no low-end loss.

Our test results show that there is truth to the claims. The Performance Plus BMW pulls smoothly from 1000 rpm in top gear and betters our most recent 325e test results with ease. It struts smartly to 60 in 8.4 seconds (versus 9.2 seconds for the four-door we tested last June) and to an impressive 130-mph top end. At 3500 rpm, the standard car feels lazy and ready to lie down, but the Performance Plus package feels up and in stride. The top-gear acceleration is also improved: the engine modifications clip 2.1 seconds from 30-to-50 mph acceleration and another 4.0 seconds from 50-to-70 mph sprints in fifth gear. And all the while, the catalyst and every other stock emissions gizmo are working diligently to cleanse the exhaust.

A few negatives must be mentioned. The PP powertrain smacks up against the 5000-rpm barrier even harder than the stock engine, so a careful eye on the tach and a fast hand on the shifter are essential. (Hartge has produced more potent engines that rev much higher, but they involve a long list of expensive parts--a complete fuel-injection system and a new crankshaft, to name two--and have no provision for emissions control.) This head package isn't cheap either, at \$1995, plus installation labor. And the 17 mpg we noted suggests there's a significant loss of fuel economy.

Nevertheless, we do think the Hartge/Performance Plus package is a sensible approach for those disappointed with the 325e's performance. It does its job well, with no loss of low-speed performance or tractability. In other words, your spouse will probably never realize that you've fiddled with the car.

Several other alterations that came from Florida with the new cylinder head weren't so convincing. We liked the \$199 rubber mounting block that squeezes into a trapezoidal hole in the center console to support VDO oil-pressure, oil-temperature, and battery-voltage gauges. The \$699 Hartge suspension package, on the other hand, was something we could do without. The combination of tighter shock valving and stiffer spring rates lowers the car about an inch and wrecks the 325e's supple ride without a worthwhile handling improvement. Transient response may be quicker, but we measured a lower limit adhesion on the skidpad than we've seen from past 3-series BMWs; we blame this on the excessive understeer induced by the Hartge package. Performance Plus also fitted a \$129 set of Textar brake pads, and we can't say they made any difference in our 70-to-0 braking tests. Last, the exterior was decorated with \$574 worth of Hartge and Kamei plastic skirts and spoilers. Let personal taste be your guide here, but be forewarned that the low-riding fiberglass air dam is very vulnerable in a world full of potholes, highway debris, and concrete curbs.

As always, we enjoyed this chance to check the aftermarket's latest homework. It goes to show you that tuners will never stop trying to beat the factory at its own game and that intelligent picking and choosing is a must when you're fiddling with costly cars. *-Don Sherman*

Vehicle type: front-engine, rear-wheel-drive, 5-passenger, 2-door sedan
Price as tested: \$24,961 (base price: \$20,970)
Engine type: 6-in-line, iron block and aluminum head, Bosch Motronic engine-control system

Displacement.....	164 cu.in, 2693cc
Power (SAE net).....	150 bhp @ 4750 rpm
Transmission.....	5-speed
Wheelbase.....	101.2 in
Length.....	176.8 in
Curb weight.....	2700 lb
Zero to 60 mph.....	8.4 sec
Zero to 100 mph.....	26.4 sec
Standing 1/4-mile.....	16.2 sec @ 84 mph
Top speed.....	130 mph
Braking, 70-0 mph.....	201 ft
Roadholding, 200-ft-dia skidpad.....	0.76 g
EPA fuel economy, city driving.....	21 mpg
C/D observed fuel economy.....	17 mpg