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WITH THE JAPANESE
ATTACKING ON ALL
FRONTS, THE GERMANS

hammer time

ARE BUSILY CREATING
SECRET WEAPONS. THE
LATEST FROM MERCEDES
IS A FACTORY-BUILT
HAMMER, A 300E WITH A
5.0 LITER V8 SLIPPED
UNDER THE HOOD. **IAN
KUAH** DROVE THE CAR
THROUGH GERMANY.
PHOTOGRAPHY BY **D.
EXIDIUS DEWBERRY**.

MERCEDES-BENZ ENGINEERS are nothing if not thorough. They started the 500E project two years ago believing that only 400 new components would be required to convert the 300E into a 5.0 liter V8 weapon. They ended up changing no fewer than 4,500 parts. Even on the bodysell, only the roof, front doors, glass, and trunk lid are common. This is the extent of re-engineering necessary to produce a car with the homogeneity required by the Stuttgart-based company, whose worldwide sales continue to climb even in this current hostile economic environment.

The heart of the 500E is its engine. The M119 Series 32-valve V8 is an all-alloy unit that is less than 18 lbs. heavier than the iron block straight six it replaces in the W124 engine bay. Without that knowledge, frightening images of strong understeer and nose-heavy handling flash through your mind when opening the spring-assisted hood and gape at the huge V8 motor. It fits so tightly in the modified engine bay that the entire firewall had to be covered with reflective foil to keep cabin heat-soak under control.

The engine is the same basic unit used in the Sauber-Mercedes Group C race cars as well as the 500SL roadster. It was first raced in two-valve form in 1989 and the work done on the four-valve race heads this year has helped improve the new heads in the road cars. This engine -- in the form seen in the 500E with its new LH-Jetronic engine management -- is also destined for the new S-Class cars to be launched in the spring of 1991. It was largely because of the new fuel injection/engine management system, which required extensive emissions and reliability testing, that this project took two years. The conversion of the rest of the vehicle to 500E spec was not a lengthy process.

Internally, the deck height of the engine block has been lowered to squeeze it under the hood with all its

ancillaries in place. To compensate for this and retain the 85.0 mm stroke, the 96.5 mm diameter pistons have been shortened and the connecting rod length altered. A new larger inlet manifold and the LH-Jetronic injection have endowed the 500E engine with more torque, 365 lbs. ft. at 3,900 rpm, than the 500SL possesses. Both motors have been tuned for the same horsepower, 326 at 5,700.

porsche

Mercedes wasn't responsible for the car's development; that job was handled by Porsche, which will also build the car for Mercedes at their Zuffenhausen plant. The Porsche development department in Weissach was responsible for designing and testing the 500E from start to finish. They designed all the new components and carried out most of the endurance testing. The fact that the two companies are barely an hour apart by autobahn was a great help to the engineers who participated in the 500E project.

The car spends plenty of time on the autobahn during production. The body-in-white W124 shell is trucked from Sindelfingen to Zuffenhausen, where it is modified and returned to Sindelfingen for painting. It then returns to Porsche for all mechanical components to be fitted and the electricals and trim work to be done. Its final journey is to the Mercedes sales department. Initial production will be 12 cars a day, stepping up to 16 at which point the maximum output

of 3,600 cars a year will be reached.

Mercedes has been clever in most areas, fortunate in others. Where the 300E has a nearly ideal 52/48 percent front/rear weight distribution with a full gas tank, the 500E has had its battery put in the trunk and the gas tank enlarged from 18.4 to 23.7 gallons to satisfy the voracious appetite of a hard-charging V8. Weight distribution is now a perfect 50/50 with a full tank of gas.

underpinnings

The basic suspension configuration of the W124 Series cars is retained. It is independent, with struts on wishbones at the front, incorporating anti-dive and negative offset geometry. The rear suspension uses the multi-link system Mercedes introduced with the 190 Series cars. In the 500E, this has anti-squat and anti-dive and a hydraulic self-levelling system. There are anti-roll bars at both ends of the car. The ABS-assisted brakes come from the SL roadster and are vented discs at each corner. The front calipers are a four-pot design.

Contact with terra firma is through 225/55ZR-16 rubber mounted on 8J x 16 in. alloy wheels of a new design. It is the big wheels that necessitate the inner wheel arches and the wheel arch lips to be altered. The track of the car is about an inch and a half wider front and rear and the body is lowered by an inch with shorter uprated springs and matching shocks. Now here comes the really clever

500E's body is the larger front spoiler. Bigger wheels and tires cause aerodynamic lift, so the front spoiler is an inch deeper and has been moved forward nearly two inches. The overall center of gravity of the car is lower, which helps stability. And while the Cd of 0.31 is slightly worse than a 300E's, the fact that the center of gravity and center of pressure are now closer means that the car is more stable at speed, especially in cross winds.

Inside, changes from the 300E are limited. The 500E is a serious long distance machine for four people, with deeply shaped front seats and individual rear seats covered in quality hide. The interior is otherwise similar to a 300E's, but with more polished burr walnut trim, and a very high level of standard equipment. Air-conditioning, central locking, electric seats, cruise control, headlight wash/wipe. It is all there and more.

q-ship

To the average driver, the 500E is indistinguishable from a 300E. So perhaps some 500E drivers may have difficulty on the autobahns, where drivers of very fast cars sometimes will not pull over because they do not believe you have enough power to pass. On the other hand, it means you can travel quickly, incognito. Just think of the fun to be had with a 500E bearing 200E or even 200D badges.

In a car like the 500E, which has such vast performance on tap, you have nothing to prove and you need not take risks trying to frantically squeeze past slower traffic. Just sit back, enjoy the sound of the multi-speaker stereo, and when a short straight comes up, plant your right foot in the carpet. Feel the wallop of the torque in the small of your back, a strong and relentless push accompanied by the muffled growl of the V8. The automatic is fast and responsive. If you are going slow enough, it will kick down two gears and really punch your backbone out.

At all times, the ASR traction control device is taming the rear axle's tendency to do its own dance on tight corners or in the wet. On tight uphill bends on our test route, I could provoke a wiggle at the back that would do credit to a belly dancer. But each time, the ASR came into play and stopped the sideways antics. In a way, I wished for a kill button to turn it off. For an experienced driver, it can be frustrating, but it will stop many a novice from leaving the road backwards and impaling himself on some fixed part of the scenery.

Mercedes sorted the ride, and

made a great contribution to the handling and grip in the process. In fact, I did not notice the ride until quite a few miles had passed under the big Michelins. The 500E is a taut car with good suspension control. But it also seems to slide over bumps of all sizes with an authority lacking in more softly sprung vehicles.

The powered recirculating-ball steering gives good feel through a newly designed four-spoke steering wheel. Most importantly, the steering rate is correctly matched in relation to the turn-in rate of the chassis and the car feels secure, solid, and of-a-piece in fast corners. Within a few miles, I was using the engine power and chassis with confidence. That is the ultimate test of a well balanced and driver-friendly car.

If I have one criticism of the 500E's dynamics, then it is the anchors. The brakes are strong and scuff the speed off well, but the pedal feel is lacking.

The Mercedes-Porsche team may have changed 4,500 parts to turn a 300E into this superb all-purpose driving machine, but the results are worthwhile. This car was developed by a team of enthusiast engineers who understand performance driving. You know what I hate most about the 500E? I don't have the \$83,402 it takes to buy one. **sci**

Vehicle: Mercedes-Benz 500E

general data

Vehicle Type: front engine, rear-wheel drive, four passenger, four door sedan
Base Price: \$83,402

Body/Chassis: unit steel construction
engine

Configuration: alloy block, dohc, 16-valve V8
Displacement: 4,973cc
Bore/Stroke: 96.5 x 85.0 mm
Horsepower: 326 bhp @ 5,700 rpm
Torque: 365 lbs. ft. @ 3,900 rpm
Compression: 10.0:1
Fuel System: Bosch LH-Jetronic fuel injection
Fuel Required: unleaded, premium

transmission

Type: 4-speed automatic
Gear ratios: 1st: 3.87; 2nd: 2.25; 3rd: 1.44; 4th: 1.00

Final Drive: 2.82:1

dimensions and capacities

Wheelbase: 110.2 in.

Length: 187.0 in.

Width: 70.7 in.

Height: 55.4 in.

Track, f/r: 60.5/60.1 in.

Curb Weight: 3,748 lbs.

Weight distribution, % f/r: 50/50

Fuel Capacity: 23.7 gal.

steering/suspension/brakes

Suspension: F: shock absorber strut, coil springs on wishbones, gas shocks, anti-dive, anti-roll bar; R: multi-link, coil springs, gas shocks, level adjustment, anti-squat/anti-lift control, anti-roll bar

Steering Type: recirculating-ball, power assisted

Brakes: F: 11.8 in. four-piston vented discs w/ABS; R: 10.9 in. vented discs w/ABS

Wheels: 8J x 16 in. alloy

Tires: 225/55ZR-16

performance

0-62 (100 km/h): 6.1 sec.

Top Speed: 155 mph

hammer time

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OF THE
MULTI-SPEAKER
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part. Mercedes realizes that a stiffly sprung car that hops and skips over bumps cannot possibly get its power down effectively, so they have gone out of their way to ensure that the car rides well as a prerequisite for good power delivery. Steel springs with linear characteristics are teamed up with progressive rate polyurethane bump stops; a special spring inside the shocks ensures measured absorption of unsprung masses before the end of rebound travel. This also works when the car is cornering, and it allows the use of a slimmer pair of anti-roll bars that are fixed more rigidly, which in conjunction with the self-levelling, all goes towards helping ride and handling. Which, of course, sees to it that the rear suspension geometry can provide maximum grip.

Apart from its wider wheel arches, the only other giveaway on the

courtesy of 500spot.com

