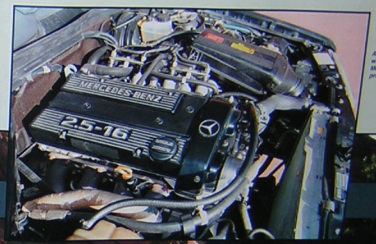
1990 190E 2.5-16 Evolution II

The ultimate 190 street racer



At 235 hp, the 190E 2.5-16 Evo II was the most powerful Mercedes-Benz four-cylinder production model.

To Americans, the 190E was the "Baby Benz," a compact four-door sedan that served as daily transportation, but to an almost fanatical group of German racers, the 190E and its derivatives were far more exciting. Aided and abetted by Daimler-Benz, tuners such as AMG poured all of their knowledge, skill, and effort into transforming these mild-mannered commuters into snarling race winners. By the late 1980s, millions of fans were watching highly modified 190Es compete in *Deutsche Tourenwagen Meisterschaft* (German Touring Car Championship) races throughout Europe. Because Daimler-Benz viewed DTM fans as prospective customers, the company pulled out all the stops to get 190E racers onto the podium.

Begun in 1985, the DTM series had developed a massive presence thanks to its fierce competition between manufacturers as well as drivers. One key to this popularity was that the race cars looked like production models, and to maintain this illusion, the rules limited body modifications. Displacement was held to 2.5 liters, and the cars had to weigh at least 1,000 kg (2,205 lb). The rules also required that a certain number be available for sale to the public, in this case, 500 cars. To be competitive on the track, DBAG had to build far more cars than the few dozen actually needed for racing. The 190E 2.5-16 Evolution II, the ultimate 190E, was the product of that necessity.

by Frank Barrett, Editor/Publisher

The 190 Racers

The first 190 production models appeared in 1983 (as 1984 models), the first sports version being the 1984 190E 2.5-16, with 185-hp in Germany and 167 in the U.S. (see our January/February 2006 issue). A production 190E 2.5-16 was fun on the street and could hold its own in club events, but for the real racers it was just a starting point. Private entrants quickly began tuning and racing them, though without visible factory support. Daimler-Benz AG would not become openly involved in DTM racing until the 1988 season.

To dedicated racers, a 190E had major advantages over other Mercedes-Benz models: it was lighter, it cost less, and the DTM was a great racing venue. Low weight means better acceleration, nimbler handling, better braking, and less tire wear, not to mention simpler, less expensive race preparation. Race spectators saw the relatively affordable 190E as attainable—not like a $1.5-million CLK-GTR—so the DTM (run by Hans Werner Aufrecht, head of AMG) was the logical race series for the car and its Audi, BMW, Ford, and Opel competitors. So on came the race versions.

190E 2.5-16: Since the DTM allowed 2.5-liter engines, it made sense to Mercedes-Benz to have one, and by mid-1988, its engineers had developed the 190E 2.5-16. The modest displace-

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ment increase nudged the street version's horsepower to 195. Because higher rpms produce more power, DBAG used polymer-coated cams to allow more radical cam timing, and the cams were driven via a durable double-roller chain. For the first time, an ASD locking differential was fitted. DBAG finally came out from behind the curtain and supported independent teams with these cars in the 1988 series. Between July 1988 and June 1993, total production came to 5,703.

190E 2.5-16 Evolution I: To raise its redline and thus gain even more power, the Evo I used a bigger-bore, shorter-stroke engine than the previous model. Its revised chassis and suspension met the basics for the Group A DTM cars. FIA regulations allowed the new engine block only if at least 10 percent of production had it. Hence, between February and May 1989, 502 Evo I cars were built, slightly exceeding the requisite quantity, which was based on the 5,000 190E 2.5-16 production cars built to date.

Evolution II

The final iteration of the 190E 2.5-16 was the more radical Evolution II, introduced in March 1990 at the Geneva motor show. By that May, 502 examples had left the assembly line at Daimler-Benz's plant. All were left-hand drive, all were painted metallic black, and each carried its own serial number on the gearshift knob. Meanwhile, in Munich, BMW was building 505 of its M5-E2 sedans for the same purpose.

The Evo II's most obvious feature—unique among Mercedes-Benz models—was its flying rear wing, reminiscent of those of the 1969-70 Dodge Daytona and Plymouth Superbird. The elevated, adjustable wing allowed relatively undisturbed air to flow not only over the horizontal surfaces (for downforce) but also over the vertical uprights (for stability). A less obvious second horizontal element extended the trunk lid rearward. Up front, the deeper air dam had an adjustable splitter and twin slots for brake cooling; adding a rubber plug where the tow hook could be fitted. Fender extensions around each wheel well accommodated wider wheels and tires, with bigger brake rotors inside them.

The entire body sat nearly two inches lower than that of a 190E 2.5-16, and hydropneumatic units—added to the usual coil spring 190E suspension—allowed the driver to raise the ride height by 15 mm (0.6 in) and 45 mm (1.8 in) above the standard level via a three-position rotary switch to the left of the steering wheel. These higher settings are essential for street use.

The striking new body aerodynamics were designed to reduce drag yet simultaneously increase front and rear downforce. The success of these new features was confirmed by tests in DBAG's wind tunnel and at the 7.85-mile circular track at Nardo, in southern Italy, where the original 190E 2.5-16 had set its 154-mph world records seven years earlier. The lowest drag coefficient obtained in testing was 0.308, though race preparation and trimming the aero devices to suit individual circuits obviously altered this figure.

Howing, oversize fender flares allowed larger, wider wheels, tires, and brakes. The Evo II's five-bolt, star-pattern Speedline alloy wheels were 17x8-1/4-in, larger than the 16x8s of the Evo I. Its original production tire was the Dunlop SP Sport D40 M2 in 245/40ZR17 size, though larger tires were fitted for racing. The huge brakes—11.8-in vented discs up front, 10.9-in solid discs at the rear—were fitted with ABS, even on the race cars, and light-alloy front calipers.

Back to Britain

For the all-important powerplant, Mercedes-Benz returned to Cosworth, which had designed the original 16-valve head. This noted British engine designer and builder developed new intake and exhaust porting in the cylinder head. To enhance the ability to rev, the number of crankshaft counterweights was reduced, so 9,000 rpm was now possible. This in turn meant that rear-axle gearing could be lowered from the Evo I's 3.27:1 to 3.46:1, enhancing acceleration. A larger oil pump was fitted, and an electric-cooling fan replaced the previous engine-driven unit. The production model's catalytic converter ensured that it met all applicable emission regulations; even the race versions used the anti-smog devices.

Given its primary purpose, the Evo II had a more luxurious interior than you might expect. Since overall weight could easily be reduced to meet the minimum required by the rules, most luxury fittings and features remained in place. The standard cloth-covered front sport seats were complemented by similar individual rear seats. Power accessories include windows, door locks, and even heated seats. Apart from the normal instruments, a simple trip computer, oil temperature gauge, and voltage gauge were nestled beneath the European-band Becker Grand Prix radio. Leather upholstery, a sunroof, and air-conditioning were options.

Rocker switch just right of headlight switch controls ride height; each car's series number (this one is 250) appears atop shift knob.

190E Power/Performance

	Power, hp	Torque, lb-ft	Weight, lb	0 to 100 kph (62 mph), sec
190E 2.3 (1984, U.S.)	113	135	2,700	11.3
190E 2.3 (1993, U.S.)	136	150	2,800	10.6
190E 2.3-16 (U.S.)	167	162	2,997	8.3
190E 2.5-16	195	173	2,866	8.1
190E 2.5-16 Evo I	195	173	2,910	7.5
190E 2.5-16 Evo II	235	180	2,910	7.1

Interior is strikingly similar to other production 190 models; original seat, similar to that of 190E 2.3-16, was replaced by previous owner.

Race Results

DTM teams running Mercedes-Benz cars—AMG being the "factory" team—used the Evo II as the basis for their race cars. All they had to do was order one, disassemble and re-engineer it, modify it, put it back together, test it, and race. Repeat as necessary to win.

For the 190E Evo I's first season, 1990, race engine output could reach 330 hp at 8,700 rpm, with 220 lb-ft of torque at 7,250. Overall weight could be trimmed below the required 2,205 lb, and depending on gearing, race versions could reach 185 mph. Unfortunately, the Evo II didn't replace the Evo I until mid-season, and then only grudgingly, so Mercedes-Benz won only five of the 22 events. Thus Hans-Joachim Stuck won the 1990 title for Audi, with Mercedes-Benz drivers Kurt Thiim third and Klaus Ludwig fifth in the standings.

By 1991, the 2.5-liter inline fours had been persuaded to spin up to 9,800 rpm, a phenomenal figure for such a unit, and power had reached 375 hp. Still, this output demanded a complete engine rebuild after just 600 km (370 mi) of racing. Since each event consisted of two 100-km heats plus practice and qualifying, this meant that engines stayed sharp for at most two weekends! At the end of the 24-race season, 190s had earned six wins. Five-time winner Klaus Ludwig was ranked second among drivers, behind Audi's Frank Biela, who benefitted from a torquier V-8 and four-wheel-drive. At least Mercedes-Benz won the manufacturers championship, with AMG the top team.

Domination Then Demise

In 1992, things finally got better. The Evo II won 16 of the 24 races, often dominating: for instance, in the second heat at Singen, the cars finished first through sixth. Those hard-fought successes were capped when five-time victor Klaus Ludwig won the driver's title ahead of teammates Kurt Thiim and Bernd Schneider. Again Mercedes-Benz was the top manufacturer, with AMG the winningest team.

By 1993, though, winning got tougher. When the DTM changed the rules before the season, BMW and Audi dropped out in protest, and Mercedes-Benz nearly did likewise. At the last minute, though, Stuttgart brought out the 1992 cars, but without proper development they were no longer so

Rear wing, attached to trunk lid, extends rearward and over fenders; top element is adjustable.

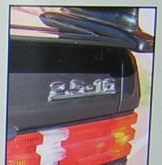
For track use, ride height can be lowered considerably from this level; 8.25-in wide wheels use all available space, allowing larger brakes.

competitive. Fitted against four-wheel drive Alfa Romeos, Evo IIs still won eight of the 22 races. Alfa's Nicola Larini took the 1993 drivers title, followed by Mercedes-Benz drivers Roland Asch, Bernd Schneider, and Klaus Ludwig.

Appropriately, an Evo II scored the 190E's 50th and final DTM win, at historic Avus on September 12th, 1993. Then the factory's 190E racing effort ended. The last production model had left the factory that summer. Its replacement, the new C-Class, was on the way and would soon earn a competition record of its own.

Not Available Here

Although all three 190E 2.5-16 production models were ostensibly offered to the European public through Mercedes-Benz dealers, none saw U.S. dealer showrooms. After all, Mercedes-Benz USA was just dipping its toes into the high-performance pool back then. In 1999, enthusiast Jeff Berg, a Mile-High Section member, visited Germany and found this



Evo II (number 250) at a used car dealer, furing covered about 50,000 km and sporting a fresh engine. He bought the car and had it shipped to Houston, where it was federalized.

On the road, the Evo II feels spirited yet not at all temperamental. The steering is a delight–light and direct, with good feedback and no tram-lining. The extra power is obvious, though our 6,000-ft driving altitude somewhat blunted its effect. With a racing-pattern, the five-speed gearbox is fun to stir, and the smooth, light clutch makes it even more enjoyable. Over good road surfaces the ride is excellent, though poor surfaces would no doubt make things less pleasant; you would only use the lowest ride-height setting on a track. With all the usual bells and whistles of its era, this car is comfortable–almost luxurious—yet great fun to drive. Even better, this Evo II is unique. As far as we know, it's the only such street car in this country.

More Information

Mercedes-Benz Quickfiiver Century, by Karl Ludvigsen, Transport Bookman
Mercedes-Benz Personenwagen, Band 3, seit 1986 by Günter Engelen, Motorbuch Verlag
Mercedes 190E, Limited Edition Extra, 1983-1991, Brooklands
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For DTM race statistics, see www.dtm.de

Technical Specifications: 1990 190E 2.5-16 Evolution II

Engine

Type:	Inline four
Designation:	M102.992 KE
Valves per cylinder:	Four, inclined at 45-degree angle
Camshafts:	Two, overhead, duplex-chain-driven
Bore and stroke, mm:	97.5x82.8
Displacement, cc:	2,463
Compression ratio:	10.5:1
Firing order:	"In vill fiht!"
Fuel required:	premium
Induction:	Bosch KE-Jetronic fuel-injection
Ignition:	Bosch Motronic
Oil capacity, qt:	5.3
Battery:	two, 12-volt, 30 amp-hr
Alternator, watts:	770
Peak power, hp:	235 @ 7,200 rpm
Peak torque, lb-ft:	180 lb-ft @ 5,000-6,000 rpm
Emission control:	three-way catalytic converter

Drivetrain

Transmission type:	GL275E, 717.404, Getrag 5-spd manual
Ratios:	1st: 4.08:1; 2nd, 2.52:1; 3rd, 1.77:1; 4th, 1.26:1; 5th, 1.00:1; R, 4.16:1
Final-drive ratio:	3.46:1

Chassis

Type:	Four-door sedan, steel unibody
Designation:	W201.036
Wheelbase, in:	104.9
Length, in:	174.4
Width, in:	67.7
Height, in:	52.8
Track, front/rear, in:	58.2/57.2
Suspension:	Four-wheel independent, hydropneumatically height-adjustable
Front:	McPherson strut, coil springs, anti-sway bar
Rear:	five-link, coil springs, anti-sway bar
Steering:	Recirculating ball
Turns, lock-to-lock:	2.8
Turning circle, ft:	37.9
Brakes:	front: 11.8x1.1; rear 10.9x0.4
Wheels:	8-1/4x15, 34-mm offset
Tires:	245/40ZR17
Curb weight, lb:	2,910 (depending on options)
Fuel capacity, gal:	18.5
Frontal area, sq ft:	20.9

Performance

Drag coefficient:	0.34
0-60 mph, sec:	7.0
Top speed, mph:	155 (electronically limited)

Price, new (1990): DM115,260 ($67,000); with MC DM119,717 ($70,600)

Standard Equipment: black metallic paint, cloth upholstery, manual climate control, trip computer, oil pressure gauge, oil temperature gauge, power windows, power door locks, adjustable rear spoiler, more.

Optional Equipment: air conditioning, sunroof, leather upholstery