Bayerische Motoren Werke
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BMW Presse

M3 Sport Evolution

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The new BMW M3 Sports Evolution:
Pole position in the touring car market

In 1989 BMW was once again very successful with the M3, BMW drivers winning many championships in races and rallies all over the world. And since stagnation means a step backwards in motor racing, BMW Motorsport GmbH has already designed an even more powerful version of the M3 as the homologation model for the 1990 season: the new M3 Sports Evolution.

The road version of this thoroughbred sports car from Munich built in limited edition and now available at a retail price of DM 85,000 (German market) features a 2.5-litre power unit developing 175 kW/ 238 bhp. This gives the new M3 Sports Evolution a top speed of 248 km/h (154 mph) and acceleration to 100 km/h (62 mph) in just 6.5 seconds.

Striking external features of this new car are the front and rear spoilers adjustable manually to three different positions, thus providing a further improvement in roadholding and driving safety. In addition, the "venturi" front section builds up an underpressure beneath the car when accelerating, in this way creating a ground effect on the road.

Specially contoured seats and a new steering wheel with highly attractive rough leather cover reflect the particularly dynamic style of this high-performance car. With fitments of this kind, the BMW M3 Sports Evolution is an all-out high-performance saloon with everything it takes for outstanding results.

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The new BMW M3 Sports Evolution:
Pole position in the touring car market
(Long version)

1989 was the third year of overwhelming racing success for the BMW M3 in many motorsport events both in Germany and abroad: More than a dozen touring car and rally championships now go to the victorious credit of this compact sports saloon from Munich.

What makes all these racing wins even more significant is that they were achieved in part against much more powerful competitors. For while the basic concept of the racing M3 has remained almost unchanged since the car's first entry into motorsport in 1987, consistent improvement of each and every detail has served to permanently enhance the potential of this outstanding car.

In 1990 BMW will once again face keen competition in international touring car championships. All of these racing events involve cars very closely related to their production counterparts. A minimum of 5,000 units of each car must have been built in 12 consecutive months to qualify for participating.

In motorsport stagnation means taking a step backwards. Accordingly, the experienced engineers of BMW Motorsport GmbH are giving the M3 some important modifications to the engine, suspension and body on its road to new success in the forthcoming racing season.

To legalise technical developments for use in motor racing - the so-called process of evolution - the international sports rules imposed by the Fédération Internationale de l'Automobile (FIA) require further production of at least 500 identical units for subsequent homologation (qualification for motorsport) in Group A.

Since the new M3 Sports Evolution is to be homologated on 1 March 1990, production of this new car will start in January 1990.

The new BMW M3 Sports Evolution therefore owes its existence to the pertinent motorsport rules. However, this fascinating car is by no means a kind of "special model", but rather a new stage in the development of the successful M3.

This new sports saloon absolutely unique in terms of its performance and market position is not intended to replace the previous M3. On the contrary, this highly successful model launched in 1986 and now built far more than 14,000 times, will remain within the BMW line-up also in future.

Through its concept and design, the new BMW M3 Sports Evolution fulfills the highest performance-oriented demands in terms of technical features, road performance and model fitments - it is the epitome of the sports saloon through and through. In addition, the M3 Sports Evolution is a very close technical relative to the racing version of the M3 and thus once again creates the close link between production and sports so typical of BMW.

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Modifications to the power unit:
A real phenomenon in terms of output per litre

The four-valve four-cylinder power unit of the BMW M3, which is already nicknamed the "world champion in output per litre among all normal-aspiration engines with catalytic converter" in its 215-bhp version, now receives a further, substantial boost of its major specifications in the M3 Sports Evolution.

Engine capacity of the M3 Sports Evolution has been increased from 2302 cc on the "standard" M3 to 2467 cc, corresponding to 7 per cent growth in cubic capacity. This is achieved by the larger cylinder bore (95 mm as opposed to previously 93.4 mm/3.74" versus 3.68") and larger stroke (87 mm in lieu of 84 mm/3.43" versus 3.31"). Maximum output has been increased from 158 kW/215 bhp at 6750 rpm on the "standard" M3 to 175 kW/238 bhp at 7000 rpm - an increase by 11 per cent.

Maximum torque of the M3 Sports Evolution has also been increased: While on the "standard" M3 torque peaks at a substantial 230 Nm (170 ft/lb) at 4600 rpm, the new 2.5-litre engine develops no less than 240 Nm (177 ft/lb) at 4750 rpm, up by 4 per cent.

The substantial output per litre already mentioned has also increased even further on the new engine. The previous "dream figure" of 68.6 kW/ltr is now up markedly to 70.9 kW/ltr on the M3 Sports Evolution. The significantly better cylinder charge made possible by this high output per litre allows a reduction of the compression ratio from 10.5 to 10.2:1, ensuring optimum fuel economy, emission con-

trol and performance. The new M3 Sports Evolution runs on unleaded premium-grade fuel.

This substantial increase in power and performance is made possible not only by the larger engine but also by intake valves with a larger diameter of 38.5 mm (1.52") as opposed to 38 mm (1.50") on the "standard" model as well as an intake camshaft with a "longer" opening angle (282 instead of 264°). New piston cooling by means of oil injection jets plus sodium-filled outlet valves maintain a stable thermal balance of the engine, whose only visible differences from outside are the red-coloured spark plug leads.

Various top-level High-Tech features clearly show that this power unit is once again a typical BMW engine. The emission control system, for example, is state-of-the-art in every respect, incorporating a metal catalytic converter. This kind of catalyst generates much lower counter-pressure within the exhaust system and thus means virtually no loss of power while maintaining the same high standard of emission control efficiency.

The M3 Sports Evolution accelerates the classic distance to 100 km/h (62 mph) in just 6.5 seconds, covers one kilometre from a standing start after 26.7 seconds and has a top speed of 248 km/h (154 mph). For comparison, the "standard" M3 accelerates to 100 km/h in 6.7 seconds and covers the standing-start kilometre in 27.3 seconds.

The new Evolution engine is not only a dynamic sports machine willingly churning out power at high engine speeds, but also a genuine work-horse with substantial pulling force in all gears. Accelerating from 80 km/h (50 mph) in fourth gear, the M3 Sports Evolution reaches the 120 km/h (75 mph) mark within just 7.6 seconds.

At the same time the engine is really economical, maintaining virtually the same standard of fuel economy as its 2.3-litre counterpart. A comparison of fuel consumption data: 6.2 ltr/100 km (45.6 mpg Imp) at a constant 90 km/h ("standard" model: also 6.2 ltr/100 km), 7.8 ltr/100 km (36.2 mpg Imp) at a constant 120 km/h (7.8 ltr/100 km), and 12.5 ltr/100 km (22.6 mpg Imp) in city traffic (12.4 ltr/100 km or 22.8 mpg Imp).

Chassis modifications:
Refinement to the last detail

Already offering a brilliant standard in every respect, the sports chassis of the BMW M3 was ideally suited for the Sports Evolution and therefore required only a few specific modifications.

As on the previous M3, the wheels are suspended on the proven single-joint spring strut axle at the front and semi-trailing arms at the rear.

At the front the suspension has been lowered by 10 mm (0.4") and the brakes adapted to the even better performance of the car: A new material, even more heat-resistant than in the past, ensures an even higher standard of brake efficiency without fading even under the toughest conditions.

The light-alloy wheels fitted as standard now come in even larger dimensions. While the "regular" model runs on 7 J x 15 wheels with 205/55 ZR 15 tyres, the M3 Sports Evolution has wider wheels in attractive cross-spoke styling with the hub and spokes finished in Nogaro silver. Wheel size is 7 1/2 J x 16, the tyres are exclusively 225/45 ZR 16 Michelin MXX.

Bodywork modifications:
Streamlining made visible

Consistent modifications in streamlining - above all with a view to motorsport requirements - are clearly, but not pretentiously, visible on the M3 Sports Evolution.

This unusual car is available exclusively in two very special styles of paintwork: glossy black with red contrasting stripes on the bumpers or brilliant red with black contrasting stripes.

Adjustable streamlining features are now becoming increasingly important in motor racing, since different race tracks with specific requirements necessitate optimum adaptation of the car. Hence, the M3 Sports Evolution comes with brand-new front and rear spoilers manually adjustable - contrary to the spoilers of the "conventional" M3 - to three different positions.

In "basic" position, that is with the spoilers fully retracted, there are still slight lift forces on the front and rear axle. An interesting point is that while this maintains the same good drag coefficient as on the "normal" M3, front wheel lift has been substantially reduced - a feature appreciated above all by the sports-minded motorist.

Fully extended, on the other hand, these important streamlining components reduce lift forces to virtually zero at the front and even achieve slight down-forces at the rear. Expressed in figures for the technically minded reader, this means an increase in axle load by a substantial 840 Newton at the front, while at the rear it is still a remarkable 400 Newton (measured at top speed).

In everyday motoring this means a substantial improvement of driving safety. Higher down-forces both front and rear not only improve the handling of the M3 Sports Evolution in all kinds of bends thanks to the greater transverse stability of the wheels, but also ensures much better grip on wet roads. A further advantage is that the driver has a much better "feel" for road conditions and vehicle movements, the car itself responding even better to the steering.

Using easy-to-operate bolted joints on the front and rear spoilers, the driver of the M3 Sports Evolution can quickly and easily set the spoilers to these two positions plus a "compromise setting" in between. This provides a total of 9 possible spoiler combinations, which the driver may vary at random, depending on his requirements. Naturally, both spoilers

are highly flexible to afford maximum protection when hitting the curb or in a car wash.

Another new streamlining concept is the "venturi" spoiler integrated in the front, which is named after its inventor. Through its specific shape, it artificially narrows the flow of air beneath the car by means of a V-shaped wind deflection profile. As a result, the air flowing beneath the car accelerates to a higher speed and creates an under-pressure, the car being literally "sucked" on to the road.

In fact, it is the front section of the M3 Sports Evolution which reveals the largest number of visible modifications versus the previous model. As an example, the BMW kidney grille has a slightly modified fin profile ensuring a further improvement in cooling efficiency. All openings in the body at the front end of the car (headlights, front ornamental grille and engine compartment lid) are additionally sealed to provide even better streamlining.

Apart from superior engine output, low weight is another essential factor in motor racing. Hence, even the road version of the M3 Sports Evolution has lost a couple of kilos in the interest of supreme performance for the sports-minded driver. The front and rear bumpers, for example, have been reduced in weight even further, and a considerable amount of weight has been saved on the luggage compartment lid, rear window and rear side windows.

The front wheel arches now flared even more distinctly clearly show that the M 3 Sports Evolution is destined for motorsport. In future, the car can be fitted with even larger racing tyres than so far.

Where the foglamps are fitted on the "standard" M3, the M3 Sports Evolution features extra-large cooling ducts for keeping the brakes cool even in heavy-duty applications.

Last but not least, the engineers of BMW Motorsport GmbH fit the high-performance but very fuel-efficient M 3 Sports Evolution with the fuel tank of the BMW 320i/325i providing ample capacity of 62 litres or 13.64 Imp gals. A side-effect of this quite substantial saving in weight is the much larger luggage compartment capacity.

The interior:
Racing atmosphere at its very best

The new BMW M3 Sports Evolution would not be a genuine product of BMW Motorsport GmbH if it failed to offer the sheer driving pleasure so typical of the white-and-blue marque. Accordingly, the driver enjoys the racing ambiente of a professional cockpit with all the amenities which add that extra bit of pleasure to dynamic motoring.

New M sports seats with special body contour and racing seat styling catch your eye immediately when looking inside the car. The headrests are attached positively to the seats and feature an opening in the middle allowing the driver of the M3 Sports Evolution to subsequently fit racing belts to the seats of his car.

It goes without saying that the new seats - which, through their backrests and seat bottoms give the driver and front passenger far more side support than the already very well contoured sports seats of the "standard" M3 - may be adjusted very accurately for length, height and angle. Hence, drivers of all sizes will find a relaxed but alert seating position at the wheel of the M3 Sports Evolution.

The red seat belts simply encourage the driver and front passenger to buckle up, beautifully rounding off the interior of the M3 Sports Evolution kept exclusively in anthracite. The centrepieces of the seat upholstery and door panel inserts are in BMW M Design. A green stripe across the windscreen avoids any significant dazzling by light from above.

The driver of the M3 Sports Evolution not only has an excellent seating position and visibility, but also a particularly good steering wheel. For experience gained in motorsport has gone directly into the design of this production steering wheel for dynamic driving. In addition, the M Technic sports steering wheel adds to the outstanding cockpit flair of the M3 Sports Evolution.

The steering wheel rim is covered with rough black leather extremely pleasant to feel and with a certain sheen after some time of use. The shift lever knob and handbrake lever handle are also finished in black rough-surface leather.

Further special fitments on the M3 Sports Evolution are the doorsill entry strip with "M3" lettering, the driver's footrest for providing an even better position in the seat and the shift lever knob with illuminated gearshift pattern.

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	SPECIFICATIONS: BMW CAR/RANGE		M3 CAT*	M3 CAT* Convertible	M3 CAT Sport Evolution	
Body Dimensions and weights	No of doors		2	2	2	
	No of seats		4	4	4	
	Length/width/height (unladen)	mm	4345/1680/1370	4345/1680/1370	4345/1680/1370	
	Wheelbase	mm	2565	2565	2565	
	Track, front	mm	1412	1412	1416	
	rear	mm	1424	1424	1430	
	Turning circle	m	11.1	n.a.	11.1	
	Fuel tank capacity/range[1]	l/km	70/795	55/610	62/705	
	Unladen weight[2]	kg	1200 (-)	1360 (-)	1200 (-)	
	Max load	kg	400 (-)	360 (-)	400 (-)	
	Max permissible weight[2]	kg	1600 (-)	1720 (-)	1600 (-)	
	Max trailer load[3]	kg				
	- braked, max. gradient 12%	kg	—	—	—	
	- unbraked	kg	—	—	—	
	Max roof load	kg	75	—[4]	75	
	Max trailer nose weight	kg	—	—	—	
	Luggage capacity, VDA test	l	420	303	420	
	Drag coefficient/front area	cw x A	0.33 x 1.89	0.36 x 1.89	0.33 x 1.89	
Engine	Layout		Inline[9]	Inline[9]	Inline[9]	
	No of cylinders		4	4	4	
	Mixture preparation		Digital Motor Electronics	Digital Motor Electronics	Digital Motor Electronics	
	Displacement, effective	cc	2302	2302	2467	
	Bore/stroke	mm	93.4/84	93.4/84	95/87	
	Compression ratio/fuel grade	:1	10.5/premium, unleaded	10.5/premium, unleaded	10.2/premium, unleaded	
	Max output	kW/bhp	158/215	158/215	175/238	
	- at engine speed	rpm	6750	6750	7000	
	Max torque	Nm	230	230	240	
	- at engine speed	rpm	4600	4600	4750	
El.	Battery/location	Amp/h	65/luggage comp	65/luggage comp	65/luggage comp	
	Alternator	Amp/W	90/1260	90/1260	90/1260	
Chassis/power transmission	Front suspension		Single-pivot spring struts with castor angle offset; small positive steering scrub radius; lateral force compensation; brake dive reduction			
	Rear suspension		Independent, with semi-trailing arms (15° trail angle); separate springs and shock absorbers; squat compensation; sports suspension tuning			
	Brakes, front		Single-piston floating caliper disc brakes with vented discs; antilock braking system (ABS)			
	rear		Single-piston floating caliper disc brakes with integral handbrake drums; antilock braking system (ABS)			
	Steering/overall ratio		Rack and pinion, ratio 19.6:1 power assistance dependent on engine speed			
	Final drive ratio		-/3.25 (-)	-/3.25 (-)	-/3.15 (-)	
	Gear ratios I	:1	-/3.72 (-)	-/3.72 (-)	-/3.72 (-)	
	II	:1	-/2.40 (-)	-/2.40 (-)	-/2.40 (-)	
	III	:1	-/1.77 (-)	-/1.77 (-)	-/1.77 (-)	
	IV	:1	-/1.26 (-)	-/1.26 (-)	-/1.26 (-)	
	V	:1	-/1.00 (-)	-/1.00 (-)	-/1.00 (-)	
	Reverse	:1	-/4.23 (-)	-/4.23 (-)	-/4.23 (-)	
	Tyres		205/55 ZR 15	205/55 ZR 15	225/45 ZR 16	
	Wheels		7 J x 15/alloy	7 J x 15/alloy	$7^1/_2$ J x 16/alloy	
Performance	Power-weight ratio	kg/kW	7.6 (-)	8.6 (-)	6.9 (-)	
	Torque-weight ratio	kg/Nm	5.2 (-)	5.9 (-)	5.0 (-)	
	Output per litre	kW/l	68.6	68.6	70.9	
	Torque per litre	Nm/l	99.9	99.9	97.3	
	Acceleration 0-100 km/h	s	6.7 (-)	7.3 (-)	6.5 (-)	
	0-1000 m	s	27.3 (-)	27.8 (-)	26.7 (-)	
	80-120 km/h in direct gear	s	-/7.8 (-)	-/8.4 (-)	-/10.7	
	Top speed	km/h	241 (-)	239 (-)	248 (-)	
Fuel consumption	5-speed/5-speed sports gearbox					
	- at steady 90 km/h	l/100 km	-/6.2	-/6.6	-/6.2	
	- at steady 120 km/h		-/7.8	-/8.0	-/7.8	
	- urban cycle		-/12.4	-/12.5	-/12.5	
	- average		-/8.8	-/9.0	-/8.8	
	4-speed automatic transmission without/with EH control					
	- at steady 90 km/h	l/100 km				
	- at steady 120 km/h					
	- urban cycle					
	- average					

( ) Figures in brackets: with automatic transmission
* Also prepared for catalytic converter (optional) (different performance data in some cases)
** Not available in West Germany

1) With standard gearbox, related to average ECE test consumption
2) Unladen weight and max weight 20 kg higher on 4-door cars
3) May be increased under certain conditions
4) Permissible roof load with hardtop: 30 kg
5) 3.91:1 with optional sports gearbox
6) Cut off electronically
7) 495 kg load when fitted with trailer hook (optional)
8) Provisional figures
9) Four-valve technology
10) Optional 205/55 R 15 V
11) 700 kg when fitted with ABS
12) Unleaded fuel possible
(Not all footnotes are used on each data sheet)

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