

■ A BMW V10 engine powers the Williams FW22 in Formula 1 racing this year. BMW returned to F1 after a 13-year absence not only to highlight its technological expertise in the world's most sophisticated form of auto racing, but also to enhance BMW production cars. "What you learn in F1 you can transfer directly to the next generation of cars," said Dr. Mario Theissen, director of BMW Motorsport.

Formula 1 "Dream Start" for BMW



When the lights signaled the start of the Australian Grand Prix on March 12, BMW officially returned to Formula 1 racing after a 13-year absence. In what BMW Motorsport Director Gerhard Berger called a "dream start," Ralf Schumacher finished third in his BMW-powered Williams FW22. His teammate, Jenson Button, in his first Grand Prix, retired shortly before the end of the race after starting at the back of the grid and running as high as fourth place.

"It's amazing," said a jubilant Schumacher in a post-race interview. "This was the best car I've ever driven. It is a great day for us."

"We didn't expect this," Berger admitted. "It is hard work from the BMW Williams team, good technical ability and good drivers that have made this result possible. I can't remember the last time a manufacturer entered Formula 1 with a podium finish."

F1 Puts BMW Road Car Development on a Fast Track

The intensely competitive world of Formula 1 is vastly different from the Grand Prix scene of the 1980s when BMW last participated in the top level of global motorsports. At that time, with turbocharged racing engine technology in its infancy, many teams were struggling to come to grips with reliability and power band issues. Using its considerable experience in turbo engine development and production, BMW jumped to the head of the pack.

The contrast today could not be more pronounced. The current 3-liter engine formula has been in existence for the past five years. The front-running Mercedes-Benz and Ferrari engines are well along in their development and have proved extremely reliable. Berger offered this candid assessment of the task ahead: "I don't see us in a position to challenge for a victory for at least a year. It is that demanding."

Given this environment, why did BMW elect to return to Formula 1? Recently retired BMW racing engine maestro Paul Rosche explained: "In F1 we are using materials so far only applied in aerospace technology. They have not been tried out...in automotive applications [because] they are simply too expensive for a standard production car. But as they are used in F1, they become less exotic, less expensive and very interesting for automotive components subject to substantial loads, like the valve train."

Dr. Mario Theissen, director of BMW Motorsport, added, "We are also interested in the feedback we will get [in] electronics particularly. F1 is actually five years ahead of series production. What you can learn here you can transfer directly into the next generation of cars. That's what's important. You can't put a price on that."

The Heart of the Matter: The V10 Engine

Unlike some carmakers that subcontract their racing engine projects to outside engineering firms, BMW develops and builds the 3-liter, V10 engine that powers the Williams cars entirely in-house. Rosche began work on the engine long before the official announcement that BMW would return to F1 racing was made on September 8, 1997 at the Frankfurt auto show.

Previously Rosche designed the famous 1.5-liter turbocharged, four-cylinder engine that powered Nelson Piquet to the world driving championship in 1983. In addition to every M

Mbriefing

by Tom Salkowsky
M Brand Manager

Welcome to the first edition of *Mdriver* on the Web.

I'm Tom Salkowsky, the new BMW M Brand Manager. Let me say first, it is both a dream and an honor to have these new responsibilities. By way of introduction, I've worked for BMW of North America, Inc. for four years. After joining the company, I worked for Erik Wensberg, the former M Brand Manager. It was a tremendous experience, both in terms of the M products and meeting many BMW enthusiasts around the country at BMW races and club events. I knew right then that this was the job I aspired to.

The enthusiasm and passion of M drivers is legendary at BMW and is a significant part of what makes M so special. I value this and want to ensure that we maintain this spirit through an open dialogue at the races, BMW CCA activities, auto shows and other special events. It is vital for M to know what you're passionate about, from different vehicles to features, equipment and even events. Because the U.S. market accounts for a substantial portion of global M sales, we have a significant voice in

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Munich. That's how the E36 M3 was built for this country, and, a few years later, why M added the M3 sedan to its lineup. Your thoughts and opinions are valued and appreciated.

I will keep you informed of M developments through Mdriver. Our goal is to put four more issues on our www.bmwusa.com website this year.

This is a great time to be an M enthusiast. We are aware that our competitors would love to cash in on our unique "brand within a brand" concept. Despite these challenges, we will stay true to the rich M tradition of building no-excuses, high-performance vehicles for drivers like you who take the M driving experience very seriously. We will not dilute the M Brand. You'll understand those are not just words when you see the new M3 coupe. It will set new standards for this market segment and rekindle the passionate flames we all share for M products.

I'm looking forward to meeting you at various BMW events or the racetrack. Until then, enjoy your M car!



EDITOR: Bob Roemer
DESIGN: Queener Design

Address correspondence to:
Mdriver, BMW North America, Inc.
P.O. Box 1227,
Westwood, NJ 07675-1227
Fax: 201 307-4099

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■ **BMW Williams driver Ralf Schumacher is starting his fourth Formula 1 season. He finished in a spectacular third place at the Australian Grand Prix in the first race for the BMW V10 engine.**

engine, he also created the magnificent 6.1-liter V12 for the McLaren F1 and the BMW V12 LMR open-top sports prototype racer. That engine won the prestigious 24 Hours of Le Mans in 1995 (McLaren) and 1999 (LMR). His latest Grand Prix racing engine first ran on a test dynamometer in January 1998.

Four months later the engine had its first outing in an F1 car. In August of that year, construction crews completed the purpose-built BMW Formula 1 engine development facility in Munich, Germany, adjacent to the company's research and development center. The location of the racing shop was no coincidence. According to Rosche, there will be intense two-way communications between the F1 engineers and their BMW production car counterparts.

The Road to Formula 1

Last December 1, Ralf Schumacher had his first taste of BMW power in the form of the V10 engine mounted in a 1999 Williams chassis. After New Year's Day, WilliamsF1, based in Grove, Oxfordshire, England, and BMW began the final, intensive testing and development period prior to the start of the season at racetracks in Spain, England and South Africa. That program also involved a riveting showdown between two young drivers vying for the vacant second seat at Williams. The racing world held its collective breath while Brazilian Bruno Junqueira and Englishman Jenson Button dueled during a week of testing and evaluation. It came down to a dramatic one-day contest at the Barcelona, Spain Grand Prix

circuit where Button was marginally quicker.

In the end, team boss Frank Williams and technical director Patrick Head selected Button for the job and contracted Junqueira to be the team's development driver, a critical role, especially with a new car and a new engine.

The BMW WilliamsF1 Team: A Veteran and a New Face

This year Ralf Schumacher enters his fourth season of F1 and his second with Williams. The brother of two-time world champion and Ferrari driver Michael, Ralf has demonstrated exceptional talent and intensity that mark him as a future world champion in the eyes of many observers. Like his older brother, Schumacher

started his climb up the motorsports ladder in go-karts. He then graduated to the German Formula Junior series (in BMW-powered cars) and on to Formula 3. He also raced a BMW-powered McLaren F1 GTR in Japan before entering Formula 1 with the Jordan team in 1997. His best finish to date was second in the rain-soaked 1998 Belgian Grand Prix at the legendary Spa Francorchamps circuit. Last year, Schumacher finished sixth in the world drivers championship for Williams. This year's Australian Grand Prix was his 50th F1 race.

Jenson Button is something of a sensation, to put it mildly. He was nine years old when he won the British Kart Super Prix. In 1998, his first year of automobile racing, Button won the ultra-competitive Formula Ford Festival at England's Brands Hatch circuit, was British Formula Ford champion and was second in the European Formula Ford Series. Last year, at 19, he tested for Williams. When team owner Frank Williams told Button of his selection as the team's second driver, just minutes before the unveiling of the new racecar and the announcement of the 2000 driver lineup, he immediately walked outside to where his father, an amateur racer, was waiting and said, "I'm a Formula 1 driver!" It was reported that there were some damp eyes for both of them. Button, now 20 years old, became the youngest Briton to start a Grand Prix when he accelerated away from the Australian starting line last month.

The FW22: Building on Strong Points

The 2000 BMW Williams FW22 was unveiled at the Circuit de Catalunya,

home of the Spanish Grand Prix, on January 24. A team led by Chief Designer Gavin Fisher and Chief Aerodynamicist Geoff Willis created the car.

"The philosophy behind the FW22 has been one of intelligent design evolution rather than revolution," said Fisher. "Although our final championship position last year was somewhat short of what we had hoped, there were specific performances [that] showed that the principles of the car were based on solid foundations. We are confident that the FW22 will make a significant step up the learning curve that will ultimately see us in championship contention within the next two or three years."

F1 in America

This year, Formula 1 makes its return to America after a six-year absence. The Grand Prix of the United States is scheduled for the Indianapolis Motor Speedway's new road course on September 24. The 2.6-mile, 14-corner circuit was built primarily in the Brickyard's infield and utilizes Turns 1, 2 and the main straightaway of the famous oval. The cars will race in a clockwise direction, opposite the traditional Speedway traffic flow. For a fascinating virtual reality tour of the impressive new facilities and the Grand Prix circuit, visit the United States Grand Prix website at www.usgpindy.com.



■ **Only 20 years old, Jenson Button ran as high as fourth place in Australia after starting at the back of the grid. This season, all eyes will be on Button, the youngest Briton ever to drive in Grand Prix competition.**

M racing

BMW WilliamsF1 FW22

Technical Specifications

Weight, lbs.	1,323 (including driver and television camera)	Brakes	Carbon discs and pads operated by AP calipers
Overall length, in.	178.7	Lubricants	Castrol
Front track, in.	57.4	Fuel	Petrobras
Rear track, in.	55.1	Wheels, front/rear, in.	O.Z. 13" x 12" / 13" x 13.7"
Wheelbase, in.	123.6	Tires	Bridgestone Potenza
Engine	BMW 3-liter V10 Formula 1 racing	Spark plugs	NGK
Transmission	WilliamsF1 semi-automatic	Cockpit instrumentation	WilliamsF1 digital data display
Chassis	Carbon aramid epoxy composite manufactured by WilliamsF1	Steering wheel.	WilliamsF1
Cooling system	Two water radiators, two oil radiators on either side of the chassis	Driver's seat.	Anatomically formed in carbon/epoxy composite material with suede covering
		Extinguisher system.	WilliamsF1/Safety Devices
		Paint system.	DuPont CENTARI



New M3 Debuts at Sebring

Like the legendary BMW 328 roadster in 1937, the new 2001 M3 (E46 is the internal BMW chassis designation for the new M3) made its North American debut as a racecar at the 12 Hours of Sebring on March 18. The new coupe, #6, entered by BMW Team PTG, and driven by Hans Stuck of Austria, Boris Said of Carlsbad, Calif., and Johannes van Overbeek of Danville, Calif., retired after seven hours with a broken rear axle following a strong run in the Florida classic endurance race, the first round of the 2000 American Le Mans Series championship.

The team of Brian Cunningham of Danville, Ky., Peter Cunningham

of West Bend, Wis., and Daren Law of Phoenix drove a 1999 PTG M3 sedan. The engine on the #10 M3 failed just past the five-hour mark.

"This obviously wasn't one of our best Sebring races," said BMW Team PTG owner Tom Milner. "We won this race in 1997 and 1998. I think the new M3 performed well. We still have some teething problems with it, which we have to sort out, but in general it was a good test for us. We couldn't test beforehand [because the car is so new], we had to go to a race to test it.

"Although developing a racecar based on an all-new production version is a formidable task, we've

learned a lot in the past five years about the stresses these racecars endure," said Milner. "Therefore, we can't say that everything on the new M3 is unproven. We're not as concerned that the car won't handle well or won't go well, but there is always concern about the reliability of new components. This year we have new parts and pieces to work with and a serious threat from Porsche. We will do our best to meet that challenge."

The main difference in the new racecar compared with its predecessor is its much-improved aerodynamics, primarily due to its wider front track. The racer follows the lines of the new M3 that was introduced at the Geneva auto show. In addition to the roll cage and other safety equipment, the racing M3 has wider fenders, larger

tires, bigger brakes and a more powerful (420-horsepower) 3.2-liter, in-line six-cylinder engine than the production vehicle. The racecar skims the ground with just 2 inches of clearance, considerably less than the road-going version.

During five years of competition, the E36 M3 amassed an impressive record. Since 1995, the M3 won 33 pole positions, 32 victories, six 1-2-3 finishes, 82 podium finishes and 130 top-10 finishes in 52 races. The M3s set 28 track records and 19 fastest race laps.

The M cars scored 11 GT championships in five years, including four manufacturer titles (1996, 1997 and two in 1998) and three driver championships (Bill Auberlen in 1997 and Mark Simo and Ross Bentley in 1998). Tom Milner's Winchester, Va.-based Prototype Technology Group that runs BMW Team PTG has topped the team ranks four times (1997, twice in 1998 and 1999).

This year's Sebring race marked the 25th anniversary of the thrilling win by Hans Stuck, Brian Redman, Allan Moffat and Sam Posey in a BMW CSL at the legendary central Florida airport track. BMW also won the GT3 class at Sebring in 1998 with an M3. Last year, BMW took the pole position and the overall victory with the BMW V12 LMR that went on to win the 24 Hours of Le Mans.



■ **The new M3 made its competition debut at the Exxon Superflo 12 Hours of Sebring in March. The car was so new that BMW Team PTG used the race as an extended test and development session. The M3 retired after seven hours of grueling competition with rear axle problems.**

BMW V12 LMR Scores Sebring Podium Finish

After a race-long duel with a pair of Audi R8 prototypes, JJ Lehto and Joerg Mueller, driving a BMW V12 LMR, finished third overall at the Exxon Superflo 12 Hours of Sebring, on the same lap as the leaders. The sister LMR, driven by Bill Auberlen, Jean-Marc Gounon and Steve Soper, finished fourth.

The two open-top prototype sports cars, powered by the 580-horsepower BMW V12 engine, will contest the entire 2000 U.S. American Le Mans Series (ALMS). BMW Team Schnitzer, under the direction of Charly Lamm, will manage the campaign.

Last year, the LMR won Le Mans and ALMS races at Sebring, Sears Point, Laguna Seca and Las Vegas. In the two races the cars did not win, an LMR finished in second place. BMW was second in the 1999 ALMS prototype manufacturers championship. That amazing record makes the BMW, designed and built in close cooperation with WilliamsF1, the most successful sports car of the last two decades.

Returning to the cockpit for BMW are JJ Lehto, Joerg Mueller, Steve Soper and Bill Auberlen. Joining the team this season is former Formula 1

and McLaren BMW driver Jean-Marc Gounon. Lehto, also a former Formula 1 pilot, won Le Mans in 1995 in a BMW-powered McLaren. Mueller was the original development driver for the BMW F1 engine project. American Bill Auberlen formerly drove an M3 for BMW Team PTG and won the SportsCar driver championship in 1997. Soper has driven BMW



GARY AUBERLEN

■ **JJ Lehto and Joerg Mueller brought their BMW V12 LMR home third, on the same lap as the leaders, after a race-long duel with two Audi R8 prototypes at the Exxon Superflo 12 Hours of Sebring, the opening race of the 2000 American Le Mans Series. Bill Auberlen, Jean-Marc Gounon and Steve Soper finished fourth in their LMR.**

touring cars in Germany and England and was a team driver during the McLaren BMW project at Le Mans and other GT races around the world.

This year the ALMS goes global, adding races at Silverstone, England; Nürburgring, Germany; and Adelaide, Australia to the U.S. and Canadian venues. See the Motorsports Calendar in this issue of *Mdriver* for race dates and television coverage information.

BMW M3 RACE CAR SPECIFICATIONS

	1999 M3	2001 M3
Chassis	Four-dr Sedan	Two-dr Cpe
Dimensions		
Length, in.....	174.9	176.8
Width, in.....	67.3	70.1
Height, in.....	52.7	Same
Wheelbase, in.....	106.7	107.5
Track front/rear, in.....	56.0/56.9	59.3/59.2
Weight, lbs.....	2535	2420
Engine		
Type	In-line, DOHC,	Same
	six-cylinder	
Displacement, liters	3.2	Same
Bore/stroke, mm	86.35/91.0	Same
Horsepower @ rpm	380 @ 8200	420 @ 8200
Torque, lb.-ft. @ rpm	290 @ 6000	300 @ 6000
Induction system	EFI HS 3.3 or EFI 3.1	Same
Spark plugs	Bosch surface gap	Same
Transmission		
Type	Hewland	Hewland
Forward speeds	Five	Six
Steering	Production power assist	Same
Differential		
Type	75% limited slip	Same
Final drive ratio.....	3.89:1	Same
Suspension		
Front.....	Strut with coil springs, ..	Same
	adjustable anti-roll bar	
Rear	Central Link with coil ...	Same
	springs, adjustable	
	anti-roll bar	
Shocks/springs	JRZ/Eibach	Same
Brakes		
Type	Brembo/PFC	Same
Front	Ventilated disc,	Same
	eight-piston caliper	
Rear	Ventilated disc,	Same
	four-piston caliper	
Wheels/Tires		
Front	BBS 11x18-in./Yokohama	Same
	racing 290/640-18	
Rear.....	BBS 11x18-in./Yokohama	Same
	racing 290/680-18.....	



■ **The new M3 bows in Geneva. BMW M displayed a European production version of the new E46 M3 at the recent Geneva auto show. The coupe features many distinctive design elements—such as a deep front spoiler, widened wheel arches, distinctive front fender gills and four polished exhaust tips. Powering the new M3 is a 3.2-liter, in-line M six-cylinder engine producing more than 320 horsepower. Available at your local BMW center late this year, the E46 M3 will be the best and fastest M3 ever.**

The M5 Driving Experience: Driver's Education Was Never Like This

It has been called an M driver's "field of dreams." The \$12.5-million BMW Performance Center and its 1.7-mile safety course, adjacent to the BMW Manufacturing facility in Spartanburg, S.C., is the home of the unique M5 Driving Experience.

The two-day program, which is part of the purchase price of every new model year 2000 BMW M5, consists of driving instruction in an M5 on the center's course that can simulate 35 different driving conditions. Completing the experience is a fun driving trip through the Carolina mountains to the fabulous Biltmore Estate in Asheville, N.C., a tour of the Spartanburg manufacturing facility, which is the home of the M and Z3 roadster and coupe and the X5 sports activity vehicle, as well as the BMW Zentrum, which depicts 75 years of BMW history.

The M5 "schoolhouse" is all about helping owners understand their new M5's leading technology and, most important, showing them how to handle the latest M sedan's amazing power. After a classroom session they'll work with a professional driving instructor in one of the center's M5s to give them behind-the-wheel experience at handling a variety of challenging driving situations.

From sharp curves to the skid pad to walls of water, the BMW Performance Center's safety course can simulate four seasons of real-world driving conditions, all year long, to show drivers how to respond to

whatever Mother Nature and other drivers can throw their way. A unique "water wall" accident-avoidance area is an important tool in teaching participants how to maneuver around dangerous situations while maintaining

control of their car. A polished, wet-surface 300-foot diameter skid pad simulates icing and slippery surface conditions. There are also sections of the course designed for autocross and slalom exercises.

Owners can even take delivery of their new M5 at the BMW Performance Center and drive it home.

The M5 Driving Experience includes one-room hotel accommodations for two nights, dinner for two on the night of arrival, breakfast, lunch and dinner on Day One and breakfast and lunch on Day Two. Also included are airport and hotel transfers. The only thing not included is travel for the customer and their guest along with applicable taxes.

In addition to the M5 Driving Experience, the Performance Center offers a range of programs geared for every experience level, including New Drivers School, Car Control Skills Clinic and an X5 School on the center's 1.4-mile "Other Roads" course. An M driving program is currently under development.

For more information about the M5 Driving Experience and the other driving programs at the BMW Performance Center, see your client adviser at your local BMW center or call 864-968-3000.



■ **New M5 owners receive personalized instruction at the BMW Performance Center in Spartanburg, S.C., to help them understand the latest M car's technology and how to handle its impressive power.**

Mcalendar

FIA FORMULA 1: bmw.williamsF1.com

Date	Location	TV Coverage
April 9	Imola (I)	SpeedVision/Fox Sports Net
April 23	Silverstone (GB)	SpeedVision/Fox Sports Net
May 7	Barcelona (E)	SpeedVision/Fox Sports Net
May 21	Nürburgring (D)	SpeedVision/Fox Sports Net
June 4	Monte Carlo (MC)	SpeedVision/Fox Sports Net
June 18	Montreal (CDN)	SpeedVision/Fox Sports Net

AMERICAN LE MANS SERIES: americanlemans.com

Date	Location	TV Coverage
April 1	Charlotte (USA)	NBC 2 hours, 45 minutes
May 13	Silverstone (GB)	SpeedVision/Fox Sports Net/ Eurosport
July 9	Nürburgring (D)	SpeedVision/Fox Sports Net/ Eurovision
July 23	Sears Point (USA)	SpeedVision (live) 2 hours, 45 minutes Fox Sports Net (delayed highlights)/Eurosport

BMW CAR CLUB OF AMERICA HIGH-PERFORMANCE DRIVING SCHOOLS

For information about BMW CCA high-performance driving schools conducted throughout the country, contact the club's office at 617-492-2500.

BMW opportunities: Contact your BMW center for information about the European Delivery Program and the M Driver Training program conducted near the Munich airport. Or, contact M directly at: **BMW M GmbH, Driver Training**
Daimlerstrasse 17-19 D-85748 Garching
Phone: 011-49-89-3 29 03 9 69
Fax: 011-49-89-3 29 03 3 62
Internet:
www.bmw.de/fahrertraining
For information on Driver Training conducted at the BMW Performance Center in Spartanburg, S.C., call 864-968-3000.

