



BMW.WilliamsF1 Team

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BMW FORMULA ONE ENGINE DEVELOPMENT

Behind the scenes- BMW's P83 V-10

Munich, Germany, September 22, 2003 ... The potent BMW P83 engine that powers the FW25 of the BMW WilliamsF1 Team packs more than 900 horsepower, revs to 19,200 rpm, yet weighs less than 200 pounds. In its quest for the 2003 Formula One World Championship title, the team has relied on this engine to not only perform, but to perform reliably. With just two Formula One races left on the FIA calendar (Indianapolis and Suzuka), the P83 will certainly go through its toughest paces yet—the differing power demands at both tracks mean optimum performance is required.

As development of new engine technologies has been made available to BMW engineers, the P83 will be retired at the end of the 2003 season to make way for a replacement in the 2004 season.

For quite some time, not much information has been made available about this powerpack from the Munich Formula One factory until now. One interesting fact is that 1,950 CAD drawings were made for this engine. Printed out and laid end to end, they would cover a distance of 4,265 feet!

Facts and figures:

- Output of the BMW P83 is over 900 bhp.
- Maximum engine speed is 19,200 rpm.
- In a race, engine speed is limited to 19,000 rpm.
- Idle speed is 4,000 rpm.
- The engine weighs less than 200 pounds.
- It covers over 300 miles between refreshing.
- Total production of the BMW P83 is 200 units, ten of which the team takes to each race.
- Before being phased out the engine will have received 1,388 upgrades and modifications.
- It contains 5,000 individual components, 1,000 of them distinct.

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- The air consumption is almost 21,500 cubic feet per hour.
- Maximum piston acceleration is 10,000 g.
- Piston speed peaks at 131 feet per second and on average, reaches 82 feet per second.
- Exhaust temperatures of up to 1,742 degrees (F) are reached.
- Maximum air temperature in the pneumatic system is 482 degrees (F).
- The ultra-high-speed 130R turn at Suzuka with its lateral load of 4g poses the greatest challenge to the oil system.
- The BMW P83 endured the highest full-throttle proportion on the Monza circuit at 73 percent per lap.
- At the Monaco Grand Prix, the transmission and engine averaged 3,100 gear changes.
- The engine block and cylinder head are made of cast aluminum and are manufactured at the BMW Formula One foundry in Landshut using a special thin-wall casting method.
- BMW Munich handles, among other things, the manufacture of the crankshaft (steel), camshaft (case-hardened steel) and camshaft covers, as well as the machining of the cylinder head and crankcase. The oil system and engine electronics also stem from BMW Munich.

BMW 83 engine timeline from concept to finish line:

- Concept: November and December 2001
- Design: January through May 2002
- Model construction at the BMW foundry in Landshut: March through May 2002
- Components manufacture: April through July 2002
- Initial assembly: July 2002
- First bench test: July 31, 2002
- Test phase development stage 1: August 2002 through January 2003
- First deployment in car: September 18, 2002
- Development to race readiness: October 2002 to mid-February 2003
- Further development: mid-February to season's final in October 2003

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Following successful bench testing, BMW's P83 replacement, the new P84, has already undergone track testing (in 2004-season configuration) at Monza on September 4, 2003.

BMW Group In America

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