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911 GT3: No compromises

The heart of the high-performance sports car is a flat-six engine.



The flat-six engine was completely redesigned by Porsche Motorsport and is already in use in modified form in the 911 GT3 R, the 911 Cup, and the 911 RSR.

Intake system

Like the racing engines for the 911 GT3 R, 911 Cup, and 911 RS models, the 911 GT3 motor is a naturally aspirated engine uncompromisingly designed for high engine speeds. In the newly designed variable intake system, made of lightweight plastic, there are now two resonance butterflies. The previous model had only one. Depending on the load demand and engine speed, they open either individually or simultaneously, providing a higher torque curve than before. One positive side effect of the technology is the efficient gas cycle, which is advantageous in terms of fuel consumption.

Crankcase

Low friction and maximum robustness: the cylinder bores in the new 4.0-liter, flat-six engine feature a plasma coating. In conjunction with phosphated, weight-optimized forged pistons, this yields benefits in oil consumption values.

Crankshaft drive

The technical backbone of the newly developed GT3 engine is an extremely stiff forged crankshaft made of a high-strength steel alloy. Wider connecting rod bearings and larger-dimensioned main crankshaft bearings combined with weight-optimized titanium connecting rods can easily handle high peak loads and ensure extraordinary robustness. The central oil feed for the highly stressed connecting-rod bearing was taken straight from race cars—a technological detail already applied in the twelve-cylinder engine of the legendary Porsche 917. This elaborate solution allows maximum centrifugal forces and guarantees a reliable lubricating film, even at high engine speeds.

Moreover, the central oil feed also reduces friction, which in turn benefits fuel consumption—an aspect that is as important in series vehicles as it is on the track. The dry-sump lubrication is the foundation for both the low installation position of the six-cylinder, naturally aspirated engine and the high lateral acceleration. A total of 6.4 liters of motor oil circulate in the system. A new vane cell sump pump extracts the motor oil at seven points. The integrated centrifuge separates the oil from the air. This technology, which was also adopted from race cars, is making its debut in series sports cars. What is more, an innovative fine oil separator reduces emissions and oil consumption.

Cylinder heads

Similar to purebred racing engines, the new GT3 engine features a rigid valve drive. The hydraulic valve clearance compensation, commonly used in series vehicles, is replaced with shims. They sit between the cams and the rocker arms and guarantee the requisite valve clearance, which no longer requires readjustment. Reduced surface pressures ensure a robust valve drive and enable maximum engine speeds of up to 9,000 rpm—ideal for meeting the challenge of driving on a racetrack. The closely related racing variants of this engine reach a maximum of 9,500 rpm using the same components in the valve drive. Depending on the driver's power requirements, the VarioCam variable valve control adjusts the inlet and outlet cams. The electronic engine management system distinguishes between engine speed and load states. The result is exceptional drivability, thanks to high output and torque values across the entire engine speed range.

Porsche 911 GT3

Engine: 4.0-liter six-cylinder boxer

Displacement: 3,996 cc D

Power: 368 kW (500 hp) at 8,250 rpm

Maximum torque: 460 Nm at 6,000 rpm

Maximum per-liter output: 92.1 kW/l (125.1 hp/l)

Consumption data: combined fuel consumption 12.9–12.7 l/100 km; CO2 emissions 290–288 g/km

Info

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Infographics 911 GT3, 2017, Porsche AG

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