



The Lamborghini Gallardo Spyder

As with every Lamborghini, the Gallardo Spyder adopts the stylistic principles of purity, athleticism and sharpness. The Spyder is not just an open-top version of the Coupé; it continues the tradition as seen with Murciélago Coupé and Roadster, by creating a self standing model.

The designers of the Centro Stile Lamborghini have succeeded in creating an athletic body with a sports car's ideal dimensions. This rear mid-engined sports car, which measures 4.30 metres in length, 1.90 metres in width and just 1.19 metres in height, conveys an impression of extreme power potential even when stationary. The design language, inspired by contemporary aircraft construction, is clearly discernible. The appearance is characterised by edges and straight surfaces. The front is defined by the two distinctive air inlets and the large trapezoidal light units, which contain efficient ellipsoidal-principle headlights. Like the Gallardo Coupé, the Spyder's far-forward cockpit with its steeply raked windscreen gives it a dynamic silhouette. In keeping with the style of the Coupé, the Spyder's flowing roofline mirrors the Coupé when the soft top is closed.

The tail has a short overhang for a powerful rear profile. However the design was dictated to achieve the authentic Spyder experience: hence no visible roll-over bars but instead a fully retractable glass window and invisible pop-up bars which are activated in case of an emergency.

Designers and engineers collaborated closely throughout the development phase of the new Lamborghini Gallardo Spyder. The car's fully integrated design and technical development has yielded stylistic elements that invariably have an underlying practical function. At the same time, all technical functions are implemented aesthetically. The most striking example: the body, which has an inverted wing profile to ensure optimal aerodynamic flow to provide the ten-cylinder mid-engine with sufficient air intake. Its design also generates downforce at the rear axle, which is reinforced by the automatic controlled rear-spoiler, activated at 75 mph and retracted by 56 mph.



The Gallardo Spyder's soft top is easy and quick to operate, and is opened and closed by a switch on the centre console. Fully-automatic opening or closing takes approximately 20 seconds. The Spyder will initially be sold with a black fabric top, but this will be supplemented by the colour variance including blue, grey and beige during the coming months.

The Lamborghini Gallardo Spyder's fully-automatic folding roof mechanism comprises the following elements:

- the soft top
- the carbon fibre engine hood, which also serves as a cover for the soft top
- an electronic control unit, which is integrated in the car's CAN-BUS network and monitors the movement of the hood
- an electric pump
- six hydraulic rams (four to operate the soft top; two for the engine hood)
- two electric actuators (one to engage the lock at the front of the roof, one to release the engine hood lock)
- an electric motor to raise or lower the rear window.

A service function positions the roof to allow access to the engine.

The rear window is activated automatically by the electronic control unit when the roof is opened or closed. This automatically-controlled movement always returns the rear window to the raised position.

When the roof is open, the driver can leave the rear window in the raised position, where it acts as a wind deflector. By using a switch on the centre console, the driver can lower the rear window (this can also be done when the roof is closed).

The new Lamborghini Gallardo Spyder is powered by the 90° V-engine familiar from the 2006 model-year Lamborghini Gallardo and the Lamborghini Gallardo SE. It is a ten-cylinder unit with a displacement of 4,961 cc and a maximum output of 520 bhp (382 kW) at 8000 rpm. At more than 100 bhp per litre, its specific output is on a par with that of racing cars.



These specifications enable the Gallardo Spyder to attain a top speed of 314 km/h (195 mph) with the roof up and 307 km/h (190 mph) when the roof is down. It sprints from 0 to 100 km/h (0 to 62 mph) in an impressive 4.3 seconds.

The maximum torque of 510 Newton metres is reached at 4,250 rpm, with 80 % of this value available at just 1,500 rpm. The stroke is 92.8 millimetres, the bore 82.5 millimetres. The cylinder liners are made of a eutectic alloy. The cylinder heads have four valves per cylinder, operated by chain-driven double overhead camshafts on each cylinder bank. The ignition system features spark plugs with integrated ignition coils.

Lamborghini engineers opted for a cylinder angle of 90 degrees rather than the classic 72 degrees. The advantage: the reduced engine height permits a lower centre of gravity for enhanced vehicle dynamics. Crankpins offset by 18 degrees ensure quiet engine operation. A further measure for lowering the centre of gravity is dry-sump lubrication. Even during sporty driving that produces high lateral forces, this ensures that the engine is supplied correctly with oil at all times.

To maintain an ample torque characteristic across the entire speed range, gas exchange is controlled by an intake manifold with variable geometry and continuously variable valve timing (inlet and exhaust sides). The variable geometry optimises the basic dynamic gas flow characteristic at both low (long intake path) and high speeds (short intake path). Variable valve timing guarantees that the valves open and close at the optimal moment across the entire speed range. For example, the inlet valve closes earlier at low speeds and later at high speeds in order to take advantage of the positive pressure impulse peaks at the inlet valves.

The throttles are operated by a drive-by-wire system with two electronically controlled throttle valves. The exhaust system comprises two separate blocks with two '5 in 1' exhaust manifolds. It goes without saying that the Lamborghini Gallardo Spyder complies with the stringent EURO 4 exhaust emissions standard.

A central element of the Gallardo Spyder's electronics is the Lamborghini LIE engine management system. It is connected to the Lamborghini GFA vehicle computer and to e.gear, ESP/ABS, the control devices on the instrument panel and



other control devices (door module, air conditioning, rear spoiler, comfort/infotainment) via a highly advanced CAN-BUS network. To enhance direct control of the most important functions and increase driving safety, all relevant information and warnings are displayed centrally on the control panel. A dedicated electronic control device monitors the function of the airbags.

The principal functions are:

Engine:

- torque
- drive-by-wire accelerator
- fuel injection management (multipoint sequential) and ignition (spark plugs with integrated ignition coils)
- management of the exhaust system with variable geometry
- management of variable valve timing
- management of the on-board diagnosis system
- emission control management
- ‘black box recorder’

Vehicle:

- electronic gear shifting (‘e gear’)
- electronic stabilisation programme (ESP) including traction control (TC), ABS with electronic brake force distribution and automatic brake differential (ABD) at front
- control of the air conditioning
- control of the rear spoiler
- control of the airbags
- monitoring of the control panel and comfort/infotainment system management

In order to ensure the best possible traction at all times, the engineers have given the Lamborghini Gallardo Spyder permanent four-wheel drive. It is based on Lamborghini’s tried and tested VT (viscous traction) system, and regulates itself without electronic control. Drive power is normally distributed between the front



and rear axles in a ratio of 30:70 at constant speed. An independent control loop varies the drive force distribution in accordance with dynamic fluctuations, weight distribution and actual friction values.

For example, when accelerating or driving uphill, more drive torque is supplied to the rear axle. If friction values at the rear axle suddenly fall under these conditions, drive torque is immediately transferred to the front axle.

Like the coupé, the Lamborghini Gallardo Spyder boasts a new six-speed gearbox with shorter ratios. More specifically, compared to the original version, first gear is 27% lower, second gear is 13%. Third, fourth and fifth gears are all 6% lower, while sixth gear is 3.5% lower.

The six-speed gearbox operates with the latest double- and triple-cone synchromesh. The optimized gearshift linkage is user-friendly and permits precise, rapid gear shifts.

The Lamborghini Gallardo Spyder can also be specified with e.gear, an electronically controlled, sequential gear shift. Using paddle switches located on the steering column, the gear changes are fast and smooth, even better than the performance of experienced drivers using the manual gearbox. e.gear has four different functional modes: normal, sport, automatic and a program for road conditions with reduced traction, for instance on snow. In the normal program, gear shifts can be performed manually. The sport setting further reduces the already extremely dynamic gear shift speed. In the automatic program, gears are changed fully automatically. When driving in urban areas in particular, this represents a significant gain in comfort.

The rear axle has a friction-type limited-slip differential (locking action 45%); the front axle limited-slip differential is controlled via the ABD (automatic brake differential). The clutch is a twin dry plate unit of a reduced diameter – a logical consequence in accordance with the concept of keeping the engine (and thus the centre of gravity) as low as possible.



In conjunction with the perfect harmonization of chassis, weight distribution, centre of gravity and aerodynamics, high body rigidity is essential to ensure optimal vehicle dynamics and driving pleasure.

For the Gallardo series, the Lamborghini engineers chose the aluminium technology developed by Audi, the world's leading manufacturer in this area.

The car uses a space frame construction based on extruded aluminium profiles. These are welded to connecting elements made from cast aluminium. The exterior elements of the aluminium body are riveted, bolted or welded to the space frame depending on their function. Other exterior add-on parts, such as the bumpers, are made of thermoplastic material and bolted on.

These measures achieve an exceptional torsional stiffness, which is represented by an optimal relationship between rigidity and weight as well as outstanding energy absorption proven in crash tests. To meet the specific demands of an open-top car, the Spyder's space frame has been structurally reinforced in the sills and A-post areas. The bonnet is made from light but extremely torsionally rigid carbon fibre.

The low weight of the space frame and the aluminium body results in an overall dry weight of just 1,570 kg.

The chassis in the Lamborghini Gallardo Spyder confidently meets the severe demands made of a super sports car. As is Lamborghini tradition, the Gallardo Spyder has double wishbones at front and rear suspensions.

Accurately controlled chassis geometry and the use of optimised dampers make for impressive chassis performance with excellent handling and stable road behaviour at high speeds. Another remarkable feature of the Lamborghini Gallardo Spyder is a level of ride comfort that is extraordinary in this class.

The Gallardo Spyder's cornering ability is designed for slight under steer on entry into the bend. It performs neutrally through the rest of the bend. Even in tight



corners, this results in an absence of body roll, in contrast to some vehicles with four-wheel drive using a viscous clutch.

The anti-dive function effectively prevents the nose of the vehicle from pitching when braking. Anti-squat ensures that the car retains its directional stability when accelerated powerfully. Power assistance designed to be some 20 percent more direct further enhances the precision of the steering. For consistent performance even during strenuous, sporty driving, it has a power steering fluid cooler as standard.

The Lamborghini Gallardo Spyder is equipped with 19-inch wheels with Pirelli P Zero tires of size 235/35 ZR19 at the front and 295/30 ZR19 at the rear. Winter tires with the same dimensions are available as optional extras, as are Pirelli P Zero Corsa tires, which further enhance the car's performance.

The brake system is equipped with an ultramodern ABS/ESP system and uses discs with a diameter of 365 mm at the front and 335 mm at the rear. Brembo 8-piston brake callipers at the front and 4-piston brake callipers at the rear provide top-class deceleration values. Extremely resistant to fading, the system achieves deceleration of more than 1.1 g on dry road conditions.

The fully-electronic stabilization program (ESP) has been developed and calibrated to assist the driver in difficult situations and, at the same time, to permit a sporty driving style. The ESP can be switched off for really sporty and track driving.

The Lamborghini Gallardo Spyder exceeds all European and North American safety standards. One example: the standard dual-stage front airbags for the driver and passenger, which also comply with U.S. 'out-of-position' requirements. Also standard are head/thorax side airbags and collision protection in the doors. Two automatically extending rollover bars are located behind the rear window and integrated into the airbag control system. In conjunction with the reinforced A-posts, they ensure reliable passenger protection should the car roll over.