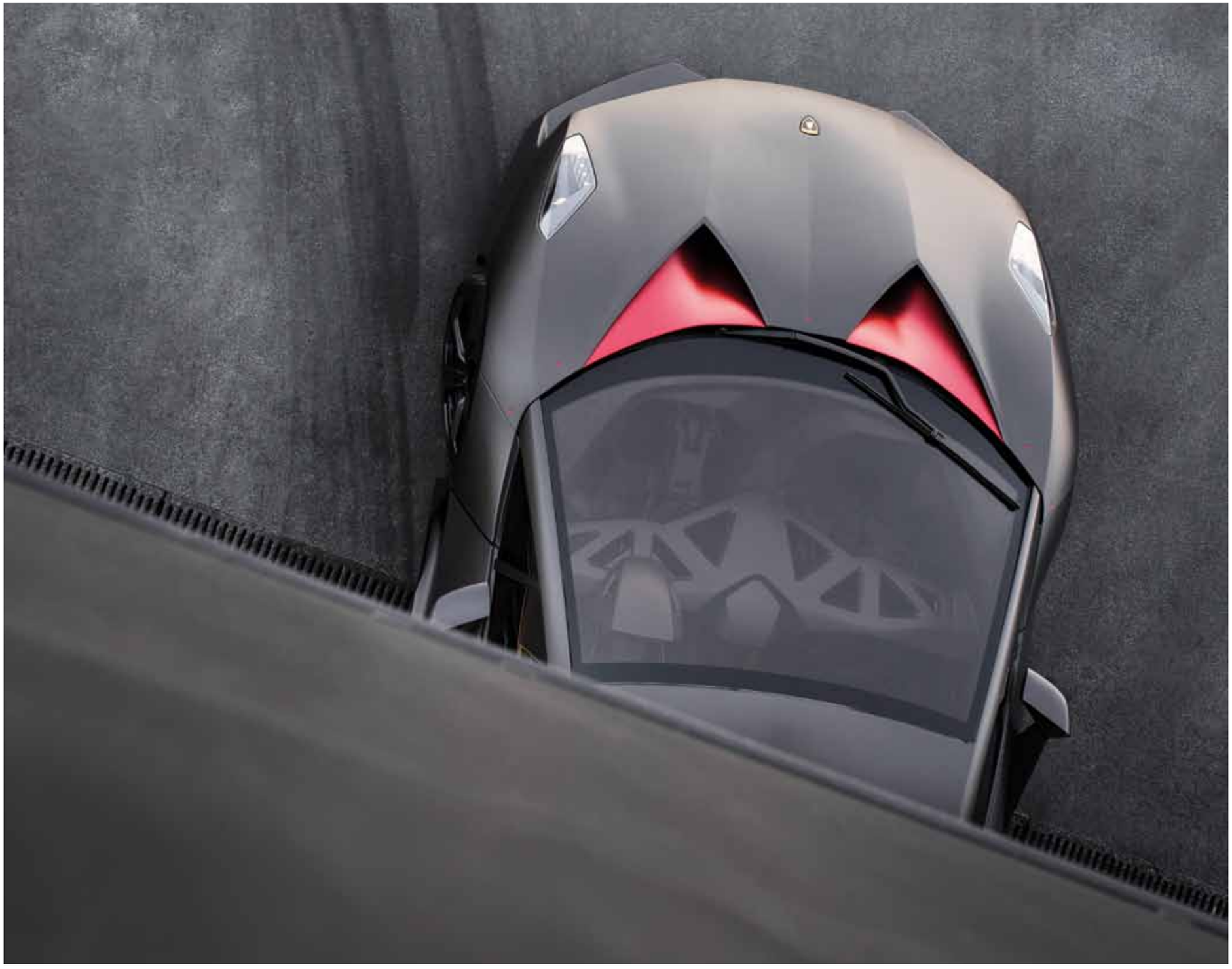

To Bob Wallace and Valentino Balboni,
who always knew what a Lamborghini
ought to be.

—SC

In memory of my father, David Mann,
who gave me my love of cars.

—JM

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LAMBORGHINI SUPERCARS 50 YEARS

FROM THE GROUNDBREAKING MIURA TO TODAY'S HYPERCARS

STUART CODLING | PHOTOGRAPHY BY JAMES MANN

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FOREWORD BY FABIO LAMBORGHINI

Ferruccio Lamborghini (1916–1992) was born in Renazzo, in the province of Ferrara; he was the first of five children of a local farmer. He loved sports cars as a boy but couldn't afford them.

During 1947, after World War II, he started his career as an entrepreneur producing low-cost tractors, using components from Italian military vehicles left after the second World War. By 1960, there were 29 Lamborghini factories producing air-heating machines. All the companies founded by Ferruccio had successfully become important Italian industries, and Ferruccio himself an important Italian entrepreneur.

He could now afford the kind of cars he had desired as a boy. As a great sports car-lover—and owner of two powerful Ferrari GTs—after falling out with Ferrari, Ferruccio decided to start to build his own luxury cars.

In only six months, in 1963 he opened the factory and produced the concept 350 GTV. All of the early Lamborghini cars were revolutionary, and this was most true of the Miura, which was the lowest, fastest (300km/h), and first mid-engined sports car in the world. All the stars bought one: Frank Sinatra, Steve McQueen, Aristotle Onassis, Dean Martin, and the Shah of Persia, among others.

We are very happy with the continuation of the Lamborghini sports car brand although in the time of my uncle the manufacturing process was by artisans, and by hand they were producing two Miuras in one week. Today they can make five Aventadors per day, and although they don't have as much artisanal content as they did in the old time, I am very pleased by the current production methods of the new German ownership: the machine is working well, and it perfectly follows the industrial philosophy of my uncle Ferruccio.

Fabio Lamborghini is director of the family-run Museo Ferruccio Lamborghini.
www.museolamborghini.com

INTRODUCTION

Ferruccio Lamborghini built his fortune and reputation on manufacturing tractors in the aftermath of World War II. He also turned healthy profits by making pneumatic valves and air-conditioning units. *Automobili Lamborghini*

The exact wording of the ill-tempered exchange between Enzo Ferrari and Ferruccio Lamborghini that prompted Lamborghini to become an automobile manufacturer in his own right—if, indeed, the conversation happened at all—is steeped in myth. And yet it is so delightfully plausible that it has remained central to Automobili Lamborghini's origin story for more than 50 years and five changes of ownership after the fact—or unfact, if you're determined to remain cynical.

Ferruccio Lamborghini came from humble stock, but he was already a successful entrepreneur, with a diverse portfolio of businesses that included a tractor manufacturer, an air-conditioning supplier, and a pneumatic valve fabricator, when he decided to join the automobile industry in the early 1960s. This was a boom period for prestige, high-performance carmakers, and it would have been perfectly natural for Ferruccio to launch his own brand even if he had not become disenchanted with Ferrari's approach to aftercare.

But myth is a vital element of brand mystique. It's what has persuaded many different people, over the course of the past 50 years, to buy and cherish wildly impractical and often temperamental beasts bearing the logo of the bull. So let us allow Ferruccio to tell his own story in his own words, as related in a 1991 interview in *Thoroughbred & Classic Cars* magazine:

> After I got my first Ferrari, my other six cars—Alfa Romeo, Lancia, Mercedes, Maserati, Jaguar were always left in the garage. In 1958 I went to Maranello for the first time to buy a 250GT coupe, the two-seater by Pininfarina. After that I had one, maybe two, 250GT Berlinettas, the short-wheelbase car from Scaglietti. I did like that one very much. It was ahead of its time, had a perfect balance and a strong engine. Finally I bought a 250GT 2+2, which was a four-seater by Pininfarina. That engine was very strong too and it went very well.
>
> All my Ferraris had clutch problems. When you drove normally, everything was fine. But when you were going hard, the clutch would slip under acceleration; it just wasn't up to the job. I went to Maranello regularly to have a clutch rebuilt or renewed, and every time, the car was taken away for several hours and I was not allowed to watch them repairing it. The problem with the clutch was never cured, so I decided to talk to Enzo Ferrari. I had to wait for him a very long time. "Ferrari, your cars are rubbish!" I complained. Il Commendatore was furious. "Lamborghini, you may be able to drive a tractor but you will never be able to handle a Ferrari properly." This was the point when I finally decided to make a perfect car.

Ferruccio Lamborghini was the youngest of five children, born in the farming town of Renazza di Cento on April 28, 1916. Astrologically inclined readers will recognize that date as falling under the sign of Taurus, the bull, believed to confer characteristics of strength and determination. As a teenager he grew more interested in the mechanics of the machines that worked the land than in the process of working the land, and it is said, though not recorded, that he enrolled in a technical college (most likely Bologna's Fratelli Taddia) to study engineering.

In 1940, at age 24, he was called up by the Italian Air Force and served as ground crew on the Aegean island of Rhodes, helping to maintain the fleet stationed there. With three military airfields and a strategic location, Rhodes was both an important base and a major target, especially as Italy drifted toward surrender following the downfall of Benito Mussolini in July 1943. Rhodes came under attack by both Allied and German forces during the Dodecanese campaign of September 1943, falling initially to Germany and then occupied by Britain after Germany surrendered in 1945. Lamborghini spent several months as a prisoner of His Majesty's Government.

Owners have come and gone, but Lamborghinis continue to be built on the same site in Sant'Agata Bolognese. Ferruccio chose it because it offered plenty of room for expansion—and he got favorable breaks from the local government.

Ferruccio returned home to a smashed economy. Automotive plants and other engineering concerns had been given over to munitions manufacture, machinery had been cannibalized or melted down to make war machines, and there was widespread hunger and stagnation. But there were also opportunities, with many of those great machines of war now unused and ripe for repurposing, and worn-out agricultural machinery needing to be repaired or replaced. Ferruccio established a tidy little business maintaining clapped-out farm vehicles and snapping up army surplus to remake into new ones; and, as the supply of ex-military machines naturally began to dry out, he formed Lamborghini Tractori SpA to build new vehicles from the ground up, including their engines.

In tandem with this, Ferruccio enjoyed tinkering with road cars and modified several 569-cc Fiat Topolinos for himself and other customers. With one, bored and stroked to 750 cc, he entered the 1948 Mille Miglia road race, but didn't complete the course. "I finished my Mille Miglia in an *osteria* [pub]," he said, "which I entered by driving through the wall."

Through the 1950s Lamborghini became one of Italy's largest tractor manufacturers, and it made Ferruccio a wealthy man. But he wasn't done. In 1960 he established another business, Lamborghini Bruciatori SpA, building air-conditioning systems for industrial and domestic use, and later in the decade, after the founding of Automobili Ferruccio Lamborghini SpA, he would open another lucrative sideline: Lamborghini Oleodynamica SpA, a manufacturer of pneumatic valves.

In Lamborghini's own origin story, after the possibly apocryphal exchange with Enzo Ferrari, Ferruccio attended to his car's unsatisfactory clutch himself, as he related in the *Thoroughbred & Classic Cars* interview:

> To start with, I bought a bigger clutch from Borg & Beck and had it fitted in the tractor factory workshop. Then we discarded Ferrari's cylinder heads, which were rather simple affairs with just a single overhead camshaft and 12 rockers. I had them replaced by heads of our own design with twin cam shafts. We then put the engine back in the 250GT and fitted six horizontally mounted carburetors, just like on the 350GT two years later. It was already quite a good car.
>
> Several times I used to wait for test drivers from Maranello, with Prova MO plates on their cars, at the entrance to the motorway near Modena. After some time we would be doing 230, 240kmh [145–150mph] and then I would start to pull away from them—my Ferrari was at least 25kmh faster than theirs thanks to our four-cam conversion. "Hey, Lamborghini, what have you done to your car?" they would ask me later. "Oh, I don't know," I used to answer with a grin!

As a businessman and successful entrepreneur, Ferruccio would not have entered a high-stakes game such as prestige automobile manufacture only to avenge a snub. The truth was that there was money to be made if you got it right. As he himself alluded to in a 1964 interview with *Sporting Motorist* magazine, there was a gap in the market for this: "In the past I have bought some of the most expensive gran turismo cars and in each of these magnificent cars I have found some faults. Too hot. Or uncomfortable. Or not sufficiently fast. Or not perfectly finished. Now I want to make a GT car without faults. Not a technical bomb. Very normal. But a perfect car."

That was the aim as he filed the paperwork to found the car company in 1962 and entered negotiations with various financial institutions and local authorities to build a new factory. While these deals were being done, he gathered a useful cluster of young and talented engineers to head up development of the prototype car in the tractor factory: Paolo Stanzani, Giotto Bizzarrini, and Gian Paulo Dallara.

Building the new factory in Sant'Agata Bolognese, near Ferruccio's other businesses, made sense from an oversight point of view, and since the area was impoverished he had no difficulties securing permission from the Communist-controlled local authorities to build on a Greenfield site. Likewise, labor costs would be cheap, though a shortage of the necessary skills would force him to outsource some work. He was also able to offset his own personal financial exposure by obtaining a long-term, interest-free loan from the local government, on condition that the factory was staffed by members of the sheet-metal workers' union. This latter deal would come back to bite him several years down the line.

Lamborghini commissioned Franco Scaglione to style the prototype's body, which would be built in Turin by Sargiotto (Carrozzeria Touring took over for what would become the production 350GT). According to Bizzarrini's account, he showed Ferruccio drawings of a 1.5-liter quad-cam V-12 Formula 1 engine he had designed and received a commission to build a larger version that would be more powerful than its Ferrari equivalent. It has subsequently been written that Bizzarrini went off-piste and delivered a full-on racing engine, which led to Bizzarrini's split with Lamborghini,

but others—including Dallara—have said that Ferruccio had not yet decided whether he wanted a fast-road engine or one more competition oriented.

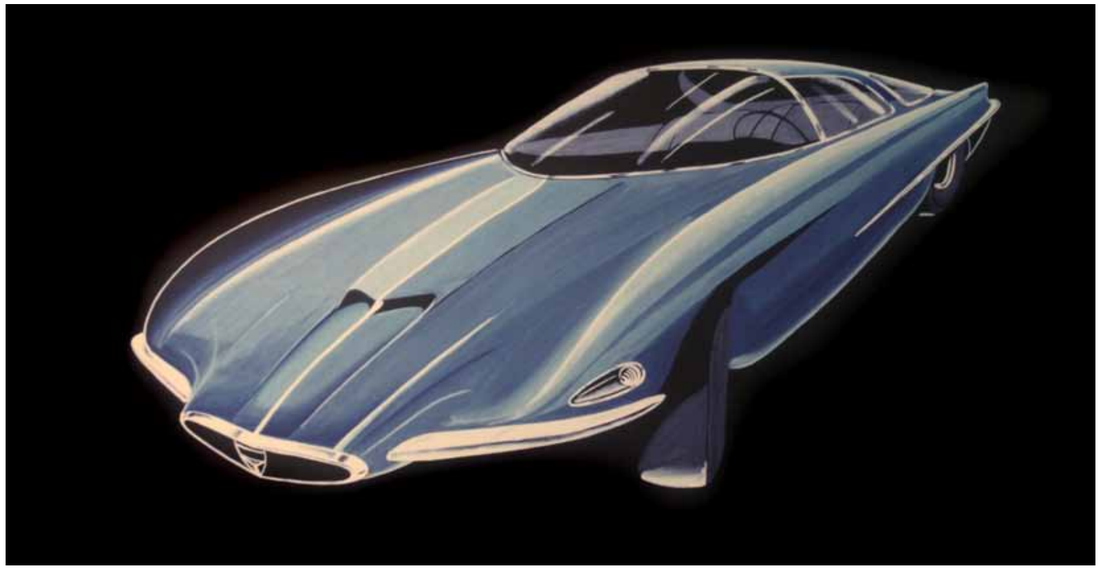
It has also been claimed, by no less an authority than the learned L. J. K. Setright, that Bizzarrini's engine never made it to production and that the resulting V-12 was actually designed in secret by Honda. He adumbrated this theory in a 1986 article in *Supercar Classics* magazine.

> The accepted legend is that the original engine was designed for Lamborghini by Bizzarrini, based on a design study of his for a 1.5-liter Grand Prix engine which (properly, from what I remember of it) came to nothing, and that this was subsequently modified or mollified by Dallara. Now I will admit to a good deal of respect for the work of young Dallara, but honestly I cannot see anything in the work of either of these engineers, either before or since, of comparable quality. I am therefore all the more inclined to believe what I was privately told quite authoritatively in 1975—that the design was secretly commissioned by Lamborghini from Honda. . . . There was no other engine, and especially no other V12, of equal merit created in the decade before the debut of the first Lamborghini, nor any superior in the years immediately following other than by Honda. What more appropriate than that one of the world's best engines should be designed by the world's best engine maker?

It is true that Honda entered Formula 1 with an intricate 1.5-liter V-12 engine in 1965, and that there are some common features—particularly the siting of the inlet tracts between the camshafts rather than inside the *V*—which are unusual. But the story seems far-fetched and predicated on anonymous sources and wishful thinking—which, for a confirmed Honda lover such as Setright, was not in short supply. More prosaically Bob Wallace, Lamborghini's longtime test driver, dismissed the notion as "crap."

The 3.5-liter all-aluminum V-12 was advanced for its time, featuring double overhead cams (though a multi-valve head would not grace it until the 1980s) for each cylinder bank, driven by a duplex roller chain and actuating inverted bucket-type cams. The wet-lined block had a classic 60-degree *V* angle, with a seven-bearing crankshaft and hemispherical combustion chambers. The piston crowns featured a pronounced dome, although extant engineering drawings show that flat-headed pistons were also considered. Bizzarrini specified a dry sump and six Weber downdraft carburetors and claimed a power output of around 360 brake horsepower, and the engine would be displayed in this form at the Turin motor show in late 1963. By then Bizzarrini had departed the project and Dallara was reworking the V-12 with a wet sump and horizontal carburetors, while detuning it for a more relaxed power delivery, in line with the prototype 350GT's character.

The 350GT prototype also appeared at the '63 Turin show, but not with the engine inside it. Long, lithe, and elegantly simple of line, the car came together too late to



Franco Scaglione's first sketch of what would become the 350GT was wildly dramatic, and even the toned-down prototype was deemed not practical enough by Ferruccio Lamborghini. *Automobili Lamborghini*

install a drivetrain or anything but a rudimentary suspension arrangement, and the engine would not fit under the low hood. Thus, Lamborghini exhibited the V-12 separately and the prototype's hood stayed closed, concealing a payload of ceramic tiles that had been installed in the engine bay to make the front end sit at the right attitude. If any prospective customer wanted to look inside the cabin or under the hood, Ferruccio would gesticulate at a nearby employee and say, "See that idiot? He's lost the keys." Some writers have erroneously attributed these events to the first public showing of the Miura.

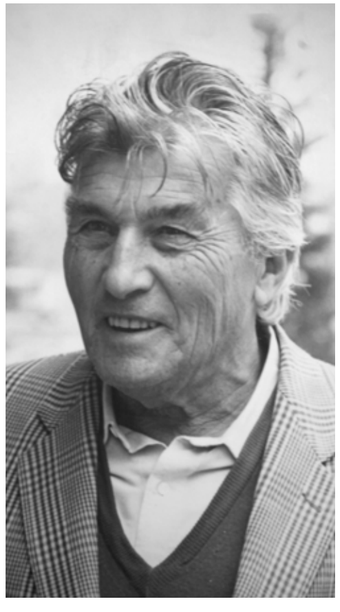
Ferruccio was not quite convinced by the car, and in any case Sargiotto did not have the facilities to attempt serial production, so he engaged Carrozzeria Touring to restyle it and build the bodies for the production 350GT. Touring came with impeccable credentials, having patented the Superlegerra method of construction in the 1930s, but was in the process of falling on hard times after expanding to build Rootes Group-based cars, which sold poorly. The company went into receivership just as the 350GT went on sale after a successful launch at the 1964 Geneva show.

The 350GT did without the pop-up headlights of the prototype, and the build quality of the steel space frame chassis and aluminum body panels was much improved. Only 13 were made in 1964, though, so Ferruccio canned plans to introduce a smaller-engined model, and instead asked Dallara to increase the swept volume of the V-12 to four liters. He hired Bob Wallace to work on the underdeveloped and underwhelming dynamics of the cars and pushed on; the company was selling the 350GT at a loss, and Ferruccio needed to offer something bigger and more powerful to compete with the likes of the Ferrari 275.

From 1965, the 350GT was offered with a larger 3,929cc engine and sold as the 400GT. But with coachbuilder Carrozzeria Touring in financial trouble, only 23 were built.

Touring, though running in administration, took on the build of the four-liter 400GT, which had a longer chassis and steel body panels, and the company also made two drophead examples of the 350GT. Zagato presented a pair of cars based on 400GT running gear in 1965, but Ferruccio, though he was reportedly pleased by their appearance, elected to focus on the 400GT as Lamborghini's mainstream model. In 1966 the definitive 400GT arrived, with a resculpted floorpan to allow a pair of small rear seats, and Lamborghini's own gearbox and differential in place of the original ZF running gear.

By then, though, Lamborghini's attention was turning to something a little more special. In all, 120 350GTs would be made, as well as 23 400GTs and 224 400GT 2+2s, but while these solidly engineered grand tourers found fans, they were not nearly as exciting as the car Lamborghini was about to unleash: the Miura.



OPPOSITE: Ferruccio Lamborghini (also pictured above) may have sold the company in the early 1970s, but he remains a crucial element of the Automobili Lamborghini story and takes pride of place in the museum.

GIOTTO BIZZARRINI

Legendary engineer Giotto Bizzarrini enjoys a reputation as founder of one of the great lost marques in the pantheon of Italian exotica. Born in 1926 and a graduate in mechanical engineering from the University of Pisa, he would have somewhat complicated and tempestuous relationships with some of his employers. However, he played a key role in the genesis of many much-loved racing machines, as well as building a limited number of cars under his own name.

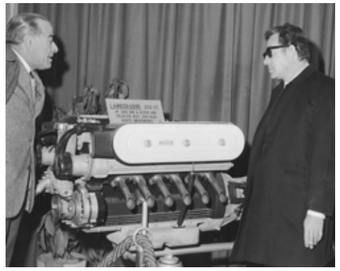
Bizzarrini's iconoclastic nature meant he never lingered over one project for too long. After a short stint at Alfa Romeo in the mid-'50s, he joined Ferrari in 1957 as a test driver and engineer, taking a hand in engine research as well as chassis development. Maranello cars bearing his stamp include the legendary short-wheelbase 250GT as well as the 250GTO.

In 1961 Bizzarrini was among the number of Ferrari staff who left to found the ATS racing marque bankrolled by Count Volpi di Misurata. Alas, ATS proved short-lived, largely because Volpi lost interest when its projects failed to deliver decent results.

The offer from Lamborghini therefore came at the right time, and was one of Bizzarrini's first freelance projects after he set up on his own Società Autostar. Accounts differ, but Bizzarrini himself has claimed that he showed Ferruccio designs for a 1.5-liter four-cam V-12 Formula 1 engine he had designed, and was instructed to "make it as big as Ferrari's three-liter." He has also claimed that an agreed bonus if he exceeded horsepower targets went unpaid until he pursued Lamborghini through the courts.

Bizzarrini's involvement with Lamborghini was brief—he said he took the engine from sketch to prototype in four months—and he moved on to work with Iso on the Rivolta and Grifo models. Following a disagreement with Piero Rivolta in 1966, and further court proceedings, Bizzarrini secured the rights to build a development of the Grifo under his own name. These Bizzarrini 5300 Stradas are now exceedingly rare—only 110 were built—and coveted.

The company went bankrupt, but Bizzarrini continued to freelance and work in academia, while also building a handful of concept cars under his own name.



Gian Paolo Dallara modified the power curve of the prototype V-12 and added a wet sump; horizontal carburetors enabled it to fit beneath the 350GT's low hood. *Automobili Lamborghini*

The 400GT 2+2 was a likeable grand tourer but was outshone by Lamborghini's more exciting models. *Automobili Lamborghini*

PAOLO STANZANI

Born in Bologna in 1938, Stanzani joined Lamborghini not long after his contemporary, Gian Paolo Dallara. Stanzani came from resolutely working-class stock—his father was a truck driver—and this would inform his practical and financially prudent engineering outlook throughout his career. Having studied engineering at Bologna University, Stanzani gained an introduction to Ferruccio Lamborghini and was taken on as Dallara's assistant in 1963.

Five years later he succeeded Dallara as chief engineer, developing the Urraco and supervising the improvement of the Miura into its final SV form. He would also play a pivotal role in the creation of the Countach, including the innovative reversed configuration of the engine and gearbox, before leaving in 1975. Later in life he would become the chief engineer at the reborn Bugatti and oversee the Gandini-designed EB110 supercar.

Stanzani's role in keeping the company afloat during the turbulence of the early 1970s should not be underestimated, though it is difficult to corroborate some of the claims—not least by Stanzani himself—that Ferruccio stepped back from day-to-day management of Automobili Lamborghini as early as 1967, placing full responsibility in Stanzani's hands.

The 350GT prototype excited interest at the 1963 Turin Show, but Lamborghini was not convinced by the styling. *Martin Buckley*

MARCELLO GANDINI

Though a quarter century has elapsed since the last launch of a Gandini-styled Lamborghini, the Piedmontese master craftsman will forever be associated with the raging bull thanks to his role in the creation of the Miura, Countach, Diablo, and many prototypes, as well as less extreme Lamborghinis such as the Urraco and Espada. The son of an orchestra conductor, Marcello Gandini was born in 1938—the same year as the man he would ultimately replace at Nuccio Bertone's studios, Giorgetto Giugiaro.

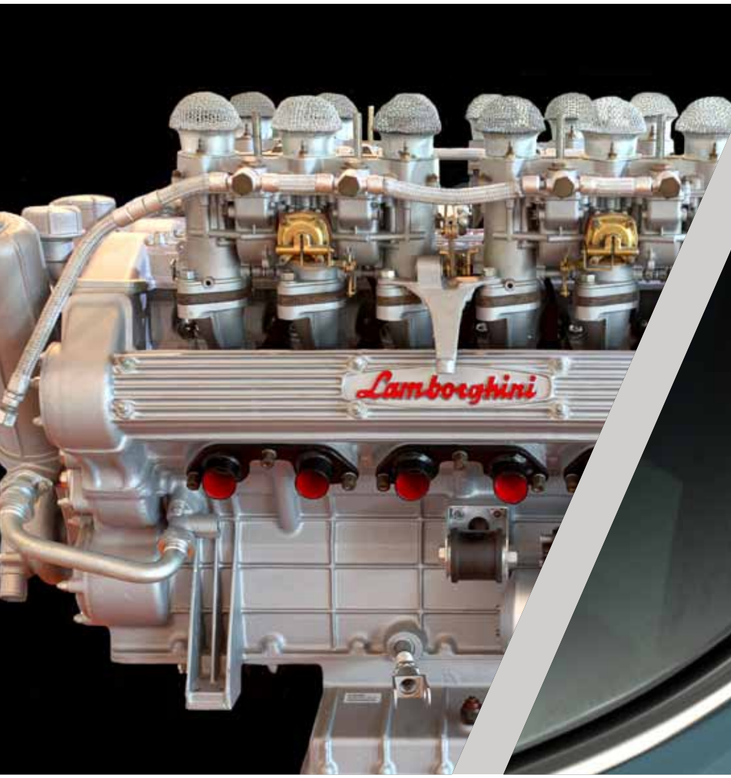
It was at Bertone that he made his name, sculpting the adventurous and dramatic Miura for Lamborghini, then beginning a long dalliance with wedgy angularity that would give the world the Lancia Stratos, the Lamborghini Countach, and the Fiat X19. He is perhaps less well-known for his work on mainstream European cars such as the Citroen BX—arguably the last of the genuinely *outré* cars to bear the double-chevron logo—the first-generation BMW 5-Series, and the Renault Supercinq.

Though Gandini remained in Bertone's employ for 14 years, he felt undervalued, and during interviews he has alluded to some rancor in their relationship. As a freelance designer, Gandini was considered one of the preeminent aesthetes of the 1980s, as his Countach design refused to date. Today he still works from a drawing board rather than a CAD terminal and remains busy, though happy to remain out of the public eye.

Marcello Gandini. *Ian Dawson*

MIURA

IN 1965 LAMBORGHINI WAS A COMPANY IN FAST-FORWARD MODE. Perhaps too fast. Production was barely getting going for the 350GT, a car that, as Gian Paolo Dallara noted, had been rushed into manufacture without adequate testing and still had many faults to iron out. But Lamborghini's young and ambitious engineering team pressed on. In November 1965 they would unveil a car at the Turin show that would stop everyone in their tracks—even though it didn't have a bodyshell yet, or a name.



THE WORLD'S FIRST MID-ENGINE SUPERCAR

Myth has it that the Miura was developed behind Ferruccio Lamborghini's back and presented to him as a *fait accompli*, but many of the project's principals have denied this. *Automobili Lamborghini*

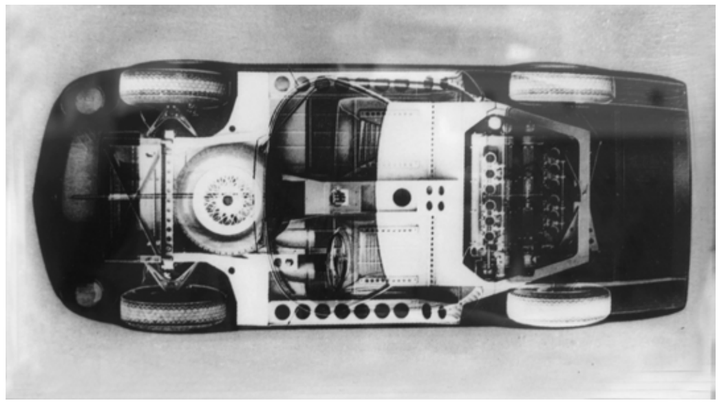
The rolling chassis unveiled at Turin and badged P400 was every bit as alluring as the body that would ultimately clothe it, and clearly derived from race car thinking: a steel central monocoque "tub" with three longitudinal box-section members, drilled for lightness and joined together by the floor and bulkheads at each end; similar box-sections extended front and rear to cradle the engine and provide suspension mounting points. The Bizzarrini V-12 engine was mounted transversely behind the driver and slightly ahead of the rear wheels, with the transmission and differential sharing an intricate one-piece casting—and the engine oil. Ferruccio, it's said, proudly exhibited the rolling chassis to showcase Lamborghini's engineering prowess. It did the job. In 1965, with the exception of the low-volume De Tomaso Vallelunga, the ATS 2500GT and René Bonnet Djet, the only high-performance cars with mid-mounted engines were the participants in Enzo Ferrari's ongoing battle on-track with Henry Ford II.

Accounts differ as to the manifesto of Lamborghini's senior engineers—Dallara, Bob Wallace, and Paulo Stanzani. Were they, as has been claimed, trying to cajole Ferruccio into dropping his longstanding objection to building an outright performance car instead of elegant grand tourers? Was this rolling chassis intended to be the thin end of the proverbial wedge?

The three men had worked on the initial chassis designs outside of office hours. It was when Dallara approached Ferruccio with the proposal, in order to secure a development budget, that he was directed to turn it into a mid-engined road car. The rapturous response to the rolling chassis at Turin sealed the deal. Lamborghini had orders in the book, and a procession of coachbuilders beating a path to his stand wanting the honor of creating the bodyshell. With the company's preferred coachbuilder, Carrozzeria Touring, already insolvent and operating in administration, Ferruccio farmed out the styling of the new car to Bertone of Turin with a view to showing a complete car at Geneva the following March; a nervous Nuccio Bertone had waited until the final day of the show before approaching with his pitch. Dallara was instructed to collaborate closely with Bertone's new designer, Marcello Gandini.

While Gandini is now credited with the design of the car, there are nuances to the story. He joined Bertone in November 1965 to replace Giorgetto Giugiaro, who had left to join Ghia; and in a 1996 interview in the authoritative *Classic & Sports Car* magazine, Giugiaro claimed, "Gandini took my sketches and finished the car—70 per cent of the design is mine." He produced a number of design studies dated October to November 1964 that featured some common elements with the final Miura, as evidence of his assertion.

This story has bobbed into view many times since then, with Giugiaro proving a not entirely reliable witness, and a more recent investigation by *Classic & Sports Car* revealed further nuances that bear retelling. Giugiaro went on record in *Automotive News Europe* in 2008 to say, "Gandini designed the Miura and I have never said anything different to this simple statement, so I have nothing to deny." This backtracking was possibly a result of a legal threat to the magazine after an earlier article on the Miura's genesis in which it published one of the controversial drawings. Then in 2012 the British magazine *Car* published an article in which Giugiaro produced the sketches once again and told the author, "Since I left some drawings there, maybe he saw them—I don't know."



The Miura's compact steel monocoque "tub" was advanced compared with Lamborghini's competitors—Ferrari included—and featured strategically located holes to lighten the structure. *Automobili Lamborghini*

Giugiaro has said that the sketches were for a project for Bizzarrini, but there is no record of this having actually been commissioned, and his own assistant at Bertone, Piero Stroppa, cannot recall seeing them at the time. Accounts vary as to when Giugiaro actually left, but Stroppa has confirmed that the tenures of Giugiaro and Gandini did not overlap and that Stroppa had the studio to himself for some time before Gandini started on November 1.

Bertone did the deal with Lamborghini at the Turin show, and Stanzani recalls, "In the first meeting, Dallara and I expressed to Marcello Gandini our points of view on how our new car should be and in particular what we had in mind for the body: a race car for the road! We mentioned the Ford GT40 because that was the *non plus ultra* at that time. A few days later, Gandini presented some sketches and renderings of his styling proposal. Ferruccio and all of us were enthusiastic and did not want any changes."

Dallara concurs that when they were shown Gandini's proposal, on Christmas Eve 1965, "the drawing was approved immediately" and the only changes made subsequently were details. Legend has it that Ferruccio's response was simply, "Make it."

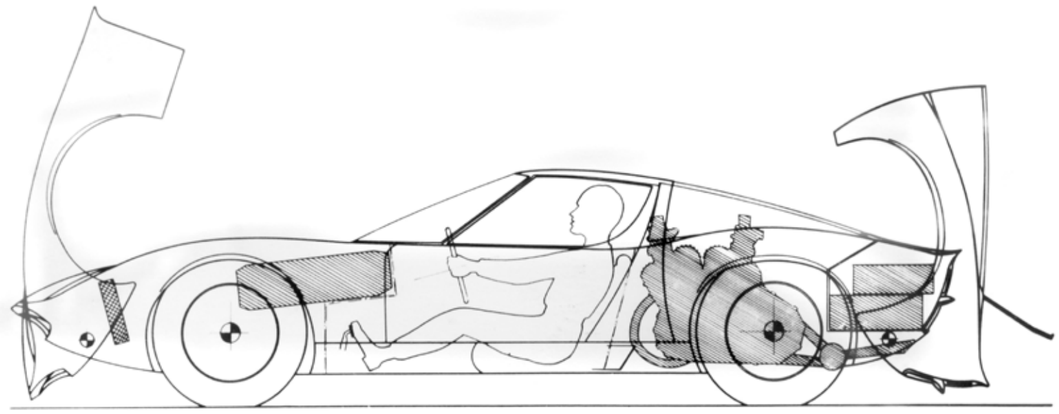
Classic & Sports Car's investigation concluded by inviting a clutch of well-respected stylists to compare Giugiaro's sketches with the finished car, most of them sharing the view that there were few really significant features or proportions in common. One, preferring not to be named, said: "The designer of the century cannot come to terms with the fact that the design of the century isn't his work. Without doubt the Miura is the work of Marcello Gandini and Giugiaro had nothing to do with it."

Regardless of parentage, the bodyshell that was uncovered at Geneva in March 1966, bearing the Miura badge for the first time—named after Eduardo Miura, whose fighting bulls had inspired Lamborghini's logo—caused a stampede. Painted a dazzling (and soon to become iconic) orange, the beautifully balanced coupe styling was complemented by strikingly unusual features, such as the pop-up headlights with their black "eyelashes." On the prototype these rose with the headlights; wisely, Lamborghini dropped this from the production model.

Here was a car—an outrageously low car at that, just 43 inches high—that looked like nothing else on the road. One-piece nose and tail panels showcased the best in Italian craftsmanship as well as—in theory—offering excellent access to the engine bay, luggage compartment, spare wheel, and fuel tank. In practice, hefting these substantial pieces of metal aloft was a challenging task that required much practice, finesse, and some strength.

Quite apart from its shape, the color and detailing of the Miura would have a profound effect on the automotive world, as L. J. K. Setright noted in his book *Drive On! A Social History of the Motor Car*:

> What made the Miura look even more striking was its color, one that had surely never been seen on a car before, even at a motor show: tantalisingly poised somewhere between yellow and orange, it became



This side elevation reveals just how close the driver's head is to one cylinder bank of the transversely mounted engine. *Automobili Lamborghini*

> in the next few years the most compellingly fashionable color—first for sporting cars, eventually for everything—ever to take over the motoring scene, in varying interpretations from Positano Yellow to that sunburnt orange which distinguishes western Texas.
>
> The Miura had a further and more lasting influence on fashion. Cleverly offsetting that extraordinarily positive color was the ultimate in negativity, matt black: it was applied to everything—window surrounds and wiper arms, mirrors and grilles, louvers and lamp-rims—that might conventionally be polished or plated. Again the industry at large was keen to copy: it took time to find black coatings that would stay matt and not chip or flake off, but in the end it was a useful production economy. The public was not at all indignant about the cheapening of their cars, where once there had been costly chromium or stainless steel, because the public had been told that non-reflective black was safer in that it did not cause dazzle.

For such a radical car to progress from rolling chassis to stage unveiling within four months was remarkable, so it's no surprise that myths have grown up around it. A frequently recounted story has it that the Miura on the stand at Geneva had a shaming secret: the engine bay was empty, save for some ballast to persuade the rear of the car to sit at the correct height. Supposedly, in the rush to complete the prototype, somehow nobody had thought to check that the engine would fit in its allocated space until it was too late; therefore, the engine bay remained locked throughout the show, though Lamborghini's sales chief, Ubaldo Sgarzi, secured enough deposits for the Miura and the 400GT for production to go ahead.

Scoop photographs taken by Peter Coltrin after the prototype had been shipped from Bertone's workshops to Sant'Agata, and which were featured on the cover of

Bertone's unique Miura Roadster made its first appearance at the Brussels auto show in 1968. Some Miura owners have been tempted to convert their own cars to achieve a similar appearance over the years, perhaps inadvisably. *Automobili Lamborghini*

Road & Track magazine, do show the prototype sitting rather high at the rear. But Nuccio Bertone has subsequently gone on record to say that he drove the prototype to Geneva himself. The most likely explanation is that myth and the effect of passing time on genuine memories has led to the 350GT prototype's launch being blurred with the Miura's.

But was the wider market ready for this car? At this point nobody at Lamborghini could be sure the Miura would sell in great numbers. Before the show, Ferruccio, Dallara, Bertone, and Sgarzi had each written on a piece of paper how many they expected Lamborghini to sell in the coming year. Bertone wrote five; Dallara wrote 100; Ferruccio 20; and Sgarzi 50. Just as pressing a concern, perhaps, was how many Lamborghini could actually make.

By early 1966 the workforce at Sant'Agata had expanded to nearly 300, but serial production of the Miura did not begin until the final months of the year. There were quality hurdles to overcome, and the compressed design and development process of the car was made very obvious by the curious ergonomics of the interior, where controls looked as if they had been packed in wherever they could fit. The driver had to work two switches to activate the lights, for instance—one near the gearlever to raise them, and another in the roof panel to toggle them on and off. And provided all the driver needed to know was how fast he was going and what revs the engine was spinning to, he was adequately served by the instrument panel in front of him. Everything else was jostling for position in a central binnacle.

Bertone built and painted the bodyshells in Turin and shipped them down to the factory, where they were mated to the chassis and trimmed. The first four Miuras off the line were retained for testing and development under Bob Wallace's eye, but even then, as Dallara has said, "Our customers were the test drivers." A number of eccentricities made it through to regular production, including a tendency for the carburetors to flood, setting the whole engine bay alight. The steering was heavy and the broad, swooping nose generated chronic lift at high speeds, making the outer echelons of its performance envelope a place to be explored only by the most skilled and fearless.

"Anyone who has achieved a true 170mph in a Miura can tell you that the effect experienced is that of a jet plane on a runway (complete with imminent take-off!)," noted Joe Sackey in *The Lamborghini Miura Bible*, "and the relationship between man, machine and God's green earth at that speed is a fragile one, compressed time-travel if you like, only to be undertaken by those brave souls who dare. You haven't lived until you've tried it . . . some say."

Even so, by the end of 1967 more than 100 Miuras had been delivered to customers—many of whom, it must be said, quickly had the interior re-trimmed to a higher standard. Only one other mid-engined rival—the Ford-engined De Tomaso Mangusta—had entered serial production, and it was far less extreme. Lamborghini had the market almost to itself.

At the Geneva show in '67, Lamborghini demonstrated an extraordinary four-seater, the Marzal, based on a stretched version of the Miura chassis and riding on

The Miura was a hit at auto shows all over Europe after making its debut at Geneva in 1966 and rapidly found buyers among the wealthy and powerful. *Automobili Lamborghini*

The original and unique Bertone-built Miura Roadster had neither roof nor side windows. The chassis was strengthened to compensate for the roof's removal, the air intakes were larger, and the rear bodywork was subtly resculpted. ***Automobili Lamborghini***

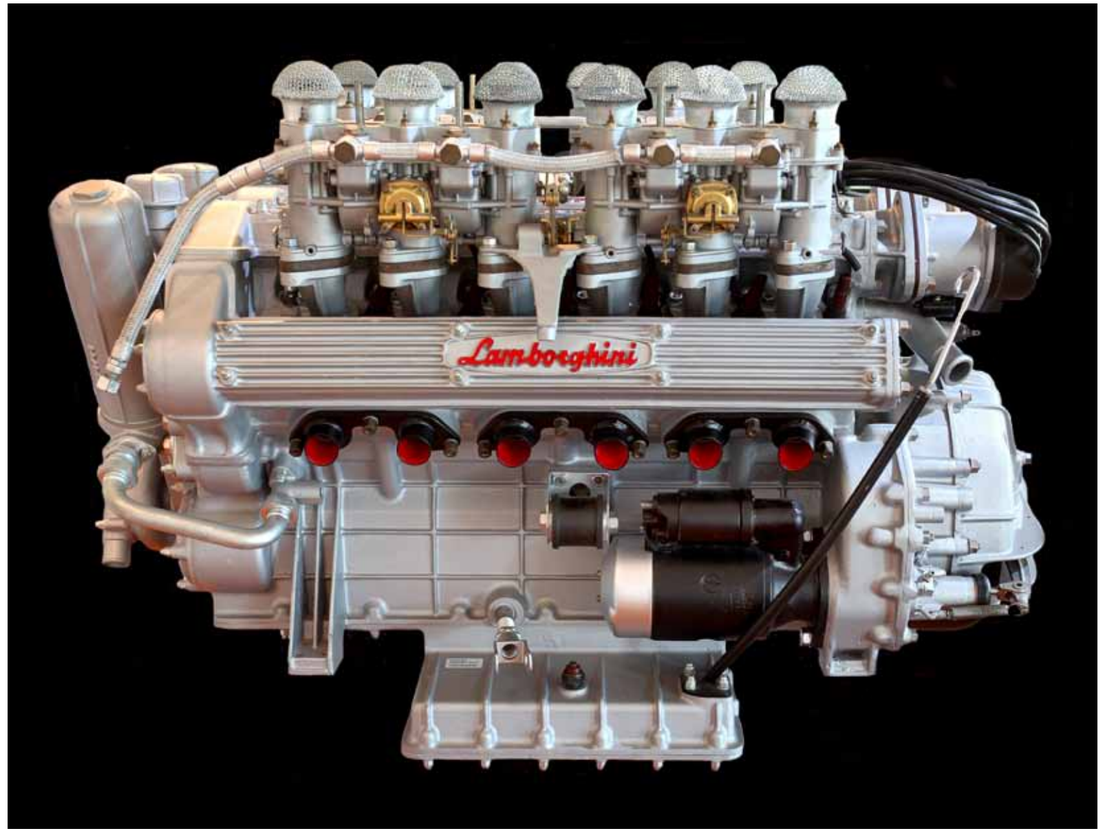
handsome Campagnolo magnesium wheels. Designed by Gandini, the wedge-shaped Marzal featured a smoked glass roof and a pair of huge, mostly glass doors that hinged upward from the roof, while the front and rear bodywork tipped outward, like the Miura's. Its V-6 engine was, in effect, half of the Bizzarrini V-12, and mounted slightly aft of the rear axle in order to maximize cabin space. The interior was a riot of space-age shapes. Setright described it as "perhaps the most extravagant piece of virtuoso styling to have come out of Europe since the war."

Testing revealed the car's balance was fundamentally poor, largely because of the engine's position. The Marzal had one further public outing, where Prince Rainer and Princess Grace were hustled around in it for a parade lap before the Monaco Grand Prix, before it went to the museum. Gandini folded the lessons learned into the four-seater Espada that Lamborghini would show the following year. The Marzal became a footnote to history, but a valuable one: the sole example fetched 1.5 million at auction in 2011.

Lamborghini wasn't just pressing on with the development of new cars. In 1968 it offered a revised version of the Miura, the P400S, as well as unveiling a roofless variant at the Brussels motor show. In an effort to reduce the buffeting that plagues the occupants of drop-top cars, Gandini subtly restyled the bodyshell and only removed the top section of the roof.

Bertone, though, required a minimum of 50 orders to commit to a production run, and while the roadster attracted plenty of interest on the stand, there weren't enough signatures in the order book by close of play. Ferruccio mothballed the idea and sold the car on to the International Lead Zinc Research Organization, who stripped it and galvanized the shell for use as a promotional exhibit. This at least ensured the sole roadster built would have a long life; it passed through several owners before being restored and repainted in metallic blue in the mid-2000s, and formed the centerpiece of a Lamborghini 50th anniversary celebration at the 2013 Amelia Island Concours d'Elegance. Some owners have had their Miuras converted into roadsters along the lines of Gandini's original design, which is perhaps not the most respectful way to treat a vehicle that is a classic in its own right.

The principal engineering changes in the P400S consisted of a stiffened chassis, constant-velocity driveshafts, and revised rear suspension, while the engine was treated to revised camshaft profiles and larger intake manifolds. These brought the V-12's claimed output to 370 brake horsepower, although there is some debate as to the veracity of the quoted figures. Still, a P400S subjected to a contemporary performance test by the British-based *Autocar* magazine yielded a top speed of 172 miles per hour and clocked 0–60 in 6.7 seconds; this at a time when the best-selling car in the UK was the Austin 1100 (maximum speed 87 miles per hour, 0–60 in 17.3 seconds).



The Lamborghini V-12's air inlet ports are between the camshafts rather than inside or outside the ***V***.

The Miura production line ran at a sedate pace; just 764 examples of this landmark supercar were built from 1966 to 1972. *Automobili Lamborghini*

Dallara left to join De Tomaso in 1968, and Ferruccio appointed Paolo Stanzani as technical director in his stead. Stanzani has since claimed in an interview (with *Evo* magazine) that Dallara's nose had been put out of joint because Ferruccio had wanted to step back from the day-to-day operation of the company and hand control to Stanzani, Dallara's junior. Whatever the truth of this claim, trouble was brewing elsewhere in Sant'Agata.

As part of the deal to obtain tax breaks from the Communist-controlled local government when he opened the factory, Ferruccio had undertaken to allow his workforce to be fully unionized. In 1969 industrial unrest swept across Italy and, not for the last time, production at the Lamborghini factory came to a halt with a series of lightning strikes as employees walked out at their union's behest. Though Ferruccio saw it coming—he was known for mingling on the factory floor rather than residing in his office—he was powerless to stop it.

In spite of the disruption, development work continued on new models, including the Jarama and the Urraco through to 1970, when Lamborghini's engineers began to hatch plans for the Miura's replacement—but not before making the ultimate Miura, the 400SV. Launched at the 1971 Geneva show, the 400SV was a proper step forward in engineering and performance.

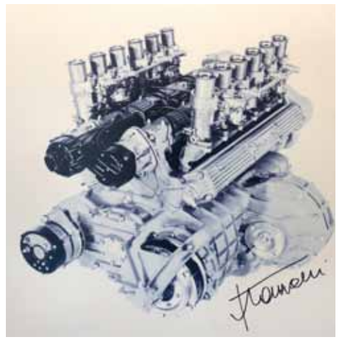
While the headline power rose to a claimed 385 brake horsepower thanks to new carburetor arrangements and different cam timing, the most significant engine change came a short way into the production run with a welcome move to separate lubrication for the engine and gearbox. The transmission gained a limited-slip differential and the suspension was revised front and rear, with a five-inch wider rear track. Outwardly you could tell the 400SV apart from its predecessors by the lack of "eyelashes" around the headlamps, as well as the more muscular rear fenders.

Mark Hughes, writing in *Classic & Sports Car*, summed up the experience of driving an SV—for the keen driver, a sort of reverential fugue state:

> How exquisite the handling is. If you were to single out one mechanical element as an example of how the Miura does things, it has to be the steering. The leather-bound rim of the three-spoke wheel is slender and invites you to hold it gently, which is the right way to hold the reins of a Miura. Light in feel, fluid in movement and uncannily communicative, the unassisted rack-and-pinion system gives millimeter-perfect control and an extraordinary sense of one-ness with the car. There's none of the self-centering of modern cars, but having to unwind lock adds to the sense of complete command.
>
> Motoring hard, but still directing the car with fingertips and palms, you feel every subtlety of road surface, tire loading and stance. No other car gives such detailed, precisely tuned messages from the world outside. . . . For a machine of such awesome performance, the Miura's refinement is such that you can genuinely imagine living with one daily. That is if you don't mind some engine noise. When you see one cylinder bank of the V12 and a pair of gigantic Weber carburetors through the Perspex panel behind the seats, you expect that progress in a Miura won't be peaceful. It isn't.
>
> Four triple-choke carburetors, 12 pistons, four camshafts, 24 valves and one timing chain create a gnashing frenzy inches from your ears—and that's only at tickover.

Miura doyenne Joe Sackey put it more pithily: "Make no mistake about it: this is not a car for the squeamish, or for whiny sissies."

Total Miura production ran to 764 cars, including rebuilds of damaged ones (musician Miles Davis famously crashed his in 1972, breaking both legs as well as his Miura). Immaculate examples now change hands for telephone-directory figures; an immaculate SV that had completed only 600 miles since a full rebuild fetched $2 million at auction in Monterey in 2014.



The Miura's engine and transmission were cast as one piece in aluminum, and early models had a single sump. *Automobili Lamborghini*

BOB WALLACE

Obsessed with cars as a youth, New Zealander Bob Wallace moved from his native Auckland to Italy in 1960 at age 21 to pursue a tentative job offer from Maserati. He and his friend John Ohlson (according to Wallace's own account; Gian Paolo Dallara's recollection is that he arrived with Chris Amon) had both been active on the hot rod scene and acted as jobbing mechanics for the continental racing teams who visited during the European winter. Neither of them spoke Italian. It was a difficult baptism in European working practices.

Wallace found gainful employment as a mechanic with Camoradi, a racing team founded by American entrepreneur Lloyd "Lucky" Casner. Camoradi achieved great success in the early 1960s in sports car racing with Maserati Tipo 61 "Birdcage" sports-racers, with their standard of preparation and semi-works status (Maserati was undergoing one of its periodic bankruptcies) attracting the likes of Dan Gurney, Stirling Moss, and Masten Gregory.

In 1961 Wallace worked for Scuderia Serenissima, the team founded by Count Volpi, working on all manner of machinery—from Ferrari sports cars to a Formula 1 Cooper T51 raced by Maurice Trintignant (Eoin Young, press secretary to Bruce McLaren, noted an encounter with his fellow Kiwi at the Cooper factory in his diary). Volpi's relationship with Ferrari would end when he bankrolled ATS, the company founded by disgruntled ex-Ferrari workers including Carlo Chiti and Giotto Bizzarrini.

Wallace also earned a reputation as a safe and capable test driver, which set him in good stead when he joined Lamborghini's payroll in late 1963 (by this time, Ohlson had moved to America to work for Carroll Shelby). As the likes of McLaren and Jack Brabham were proving on the Formula 1 circuit, drivers with mechanical experience were incredibly valuable, and Wallace soon found himself appointed chief test driver with a staff of four.

For the development of the 350GT, Miura and Countach owed much to Wallace's engineering rigor. But these were wild times on roads that were considerably less busy than they are now.

"All the factory drivers would clock in on the autostrada toll and get a Milan-to-Modena time," Wallace told *Road & Track* in a 1998 interview. "Everyone would try to beat the record. My fastest time was 38 or 39 minutes for the 106-mile distance, averaging well over 160mph. I'd go hunting for a [Ferrari] Daytona or a [Maserati] Ghibli with *Prova* [test] plates and we'd run each other down the road. While we never compared notes on the cars, we did become fairly good friends with the Ferrari and Maserati testers."

Heading west from Italy's motorsport valley and over the mountain range that forms Italy's "spine," Wallace and his friendly rivals also engaged in an unofficial world underground speed record, as he related in an interview with *Hemmings Sports & Exotic Car* in 2008:

> I don't know whether you've been over the autostrada through the Apennine Mountains from Bologna to Florence, but there's a whole series of sweeping tunnels through the mountains, and that was it. Now, whoever set the quickest clock time, from one toll gate to the next, he had the record. Back then, they had a stamp-in, stamp-out ticket with the time on it, and so forth and so on. Oh, it was a lot of fun. You look back on it, and it was actually dangerous and stupid. But that's the way it was. Crazy, but fun. Couldn't do it today in the traffic and everything. Hopefully, the country has gotten a little saner since then.

Wallace left Lamborghini in 1975, fearing for the company's future under its new owners. He handed over test-driving duties to another former mechanic, who had joined Lamborghini as an apprentice in 1968—Valentino Balboni. Initially he returned to New Zealand with his wife, but then he moved to the USA to found an automotive restoration company.

Ill health prevented him from attending Lamborghini's 50th anniversary celebrations at the factory in May 2013, and he passed away that September.

"The news of the death of Bob Wallace hit me and all of us at Lamborghini and leaves us with a great sorrow," said President and CEO Stephan Winkelmann. "As the first test driver of the company, Wallace played a key role in the early years of Lamborghini and strongly contributed to the birth of the myth of the Bull. Automobili Lamborghini is close to his relatives and friends, and will honor his memory."

Miura P400

Chassis	Steel box-section monocoque
Suspension	Independent double wishbones front/rear, coil springs, telescopic shock absorbers, anti-roll bars
Brakes	Unventilated Girling discs
Wheelbase	2504 mm
Front/rear track	1412 mm/1412 mm
Wheels/Tires	15 in × 7 in, Pirelli Cinturato 205/15
Engine	Rear transverse-mounted 60-degree V-12
Bore/Stroke	82 mm/62 mm
Cubic capacity	3939 cc
Compression ratio	10.4:1
Maximum power	370 bhp at 7500 rpm
Valve gear	Dual overhead camshafts, chain drive, 2 valves per cylinder
Fuel/ignition system	6 Weber carburetors, Bendix pump, 2 coils and distributors
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed
Transmission	Rear-wheel drive
Clutch	Dry single-plate, hydraulically assisted
Dry weight	1040 kg
Top speed	177 mph

Miura P400S

Chassis	Steel box-section monocoque
Suspension	Independent double wishbones front/rear, coil springs, telescopic shock absorbers, anti-roll bars
Brakes	Unventilated Girling discs (ventilated from second phase)
Wheelbase	2504 mm
Front/rear track	1412 mm/1412 mm
Wheels/Tires	15 in × 7 in, Pirelli Cinturato 205/15
Engine	Rear transverse-mounted 60-degree V-12
Bore/Stroke	82 mm/62 mm
Cubic capacity	3939 cc
Compression ratio	10.4:1
Maximum power	370 bhp at 7500 rpm
Valve gear	Dual overhead camshafts, chain drive, 2 valves per cylinder
Fuel/ignition system	4 triple-stroke Weber carburetors, Bendix pump, 2 coils and distributors
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed
Transmission	Rear-wheel drive
Clutch	Dry single-plate, hydraulically assisted
Dry weight	1040 kg
Top speed	177 mph

Miura P400S

GIAN PAOLO DALLARA

Born in Varano de' Melegari in 1936, Dallara studied aeronautical engineering at the Politecnico de Milano after finding his original choice of university, in Parma, too limiting. When Enzo Ferrari came shopping for graduate trainees, Dallara naturally considered this too good an offer to refuse and began working at Maranello in December 1959.

After two years of focusing on stress engineering in Carlo Chiti's design department, he left to join Maserati, but in 1963 he received a call from Giotto Bizzarrini, whom he had known at Ferrari and who had been engaged to design Lamborghini's V-12 engine. Dallara duly became chief engineer at Lamborghini after just five years in the trade.

"It surprised me then and it still does surprise me that Lamborghini should ask such a young man to be chief engineer," he said in an interview in 2004. "After all, I was under 30."

One of his first tasks was to redevelop Bizzarrini's peaky and competition-focused engine into one more suited to Ferruccio's vision, as well as specifying the chassis of what would become the 350GT. Then, in collaboration with Bob Wallace and Paulo Stanzani, came the Miura. He wrote in his autobiography, *It's A Beautiful Story*:

> I had nothing else to do on a Saturday or a Sunday anyway, and had a whole factory to play around with. Let's build a lighter car to show it could be done. Have some sort of a mobile test bed for new ideas or trying something different, that sort of thing.
>
> He [Ferruccio] told me, "You can do whatever the hell you want to do as long as it doesn't interfere with your daily job." You get up and start testing at five in the morning, and drive and play around until three in the afternoon, and then go and play around trying to build something. Well, I didn't have anything better to do, and I've always enjoyed cars and still do.
>
> But as far as any serious effort to build a race car, no, no, that's something that writers and journalists and people in the past just sort of invented.
>
> Ferruccio Lamborghini's avowed intent was to produce faster and more attractive cars than Ferrari. Initially the [Miura] bodywork was to have been produced by Touring, but they were replaced by Bertone, who was also in competition with Pininfarina and Ferrari. I remember when Nuccio Bertone arrived in the factory on Christmas Eve with the original sketch: it was an immediate success, we were really impressed. And that was how one of the greatest phenomena in Italian motoring history was born.

Dallara left Lamborghini in 1968 for De Tomaso, where he designed both the road-going Pantera and a Cosworth-engined Formula 1 car, which was run by a young Frank Williams. The tragic death of driver Piers Courage—burned when magnesium in the chassis caught fire during an accident at the 1970 Dutch Grand Prix—prompted De Tomaso to quit F1 at the end of that year, and Dallara's next move was to found his own agency.

He acted as a design consultant on the Countach, but in recent years his company Dallara Automobili has carved a niche as a race car manufacturer and composite subcontractor, building successful Formula 3 and IndyCar racers and supplying the F1 feeder series GP2 and GP3.

Miura P400SV

MIURA S JOTA

Ferruccio Lamborghini may not have been familiar with the old saying that the quickest way to make a small fortune in motor racing was to start out with a large one, but he shared that outlook. Though he was adamant that his marque would not participate in motor sports, he did permit Bob Wallace to develop a prototype version of the Miura during 1970 that would be eligible for GT racing. This was a moving target, since sports car racing was easily as popular as Formula 1 at the time and just as prone to snap rule changes, as the governing body sought to limit performance gains—and manufacturers continued to dance around them. Fittingly, the name Jota derives from a kind of dance thought to originate in the Aragon region of Spain, and which shares some elements with the waltz.

Wallace stripped weight from the car, including the interior trim, added roll cages to the cabin, and made extensive detail changes to the suspension geometry. He also fitted wider rear wheels (up from seven inches to nine). The most noticeable exterior difference was at the front, where the pop-up headlights were replaced by fared-in ones, underlined by a chin spoiler added to balance out the Miura's characteristic front-end lift at speed. Many of the exterior panels were formed from lighter gauge materials, including aluminum alloy. Wallace also repositioned the fuel tanks to each side of the car to improve its balance.

In the engine bay the Miura S Jota received many of the upgrades due for the Miura in 1971, including the separation of the engine and gearbox lubrication systems. Along with a higher compression ratio, this yielded a reported 440 brake horsepower at 8,000 rpm.

Wallace submitted the car as a proposal to Ferruccio but was turned down, and the prototype came close to being scrapped before a wealthy Italian enthusiast stepped in to buy it. He did not get to enjoy the car; it left the road—reportedly with his mechanic at the wheel—and hit a bridge, then set alight. Contemporary photographs reveal the extent of the fire damage.

The original Jota was not rebuilt, but some customers requested cars built to a similar spec, and Lamborghini duly obliged. From 1971 to 1974, a number of Miura SVJs (thought to be five, but some reports put it as high as seven) left the factory. These included many of the engine, drivetrain, bodywork, and suspension modifications made to the S Jota, but with the interior left intact. At least two went to German Lamborghini dealer and racing driver Hubert Hahne; another is said to have gone to the Shah of Iran and was later bought by actor Nicolas Cage.

Other replicas also exist—modified by owners from original Miuras, to the horror of purists.

Miura P400SV

Chassis	Steel box-section monocoque
Suspension	Independent double wishbones front/rear, coil springs, telescopic shock absorbers, anti-roll bars
Brakes	Twin-servo ventilated Girling discs
Wheelbase	2504 mm
Front/rear track	1412 mm/1541 mm
Wheels/Tires	15in × 7in, Pirelli Cinturato 205/15 (front); 15 in × 9 in, Pirelli Cinturato 255/15
Engine	Rear transverse-mounted 60-degree V-12
Bore/Stroke	82 mm/62 mm
Cubic capacity	3939 cc
Compression ratio	10.7:1
Maximum power	385 bhp at 7850 rpm
Valve gear	Dual overhead camshafts, chain drive, 2 valves per cylinder
Fuel/ignition system	4 triple-stroke Weber carburetors, Bendix pump, 2 coils and distributors
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed
Transmission	Rear-wheel drive
Clutch	Dry single-plate, hydraulically assisted
Dry weight	1245 kg
Top speed	186 mph

COUNTACH

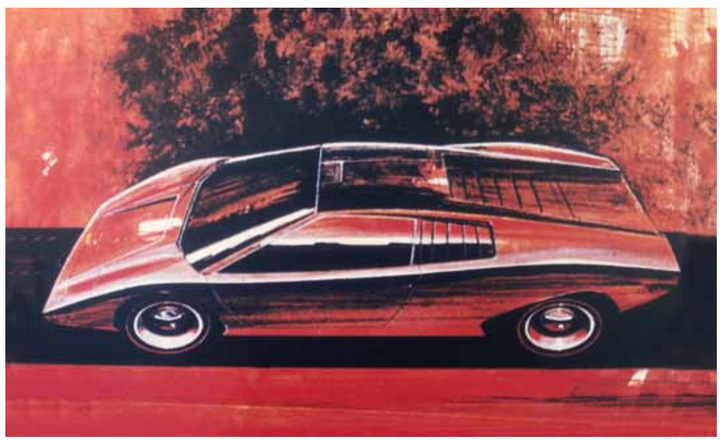
“COUNTACH!” THIS EARTHY PIECE OF PIEDMONTESE VERNACULAR—for which there is no exact translation, but it was typically used by young men in appreciation of an attractive lady—has been variously attributed to Nuccio Bertone and Ferruccio Lamborghini as they first clapped eyes on the prototype then known as Project 112. Since Lamborghini was born and brought up in Emilia-Romagna, it’s more plausible to imagine that it was Bertone, a Piedmontese through and through, who was moved to ejaculate thus as he appraised Marcello Gandini’s wedgy work-in-progress.

SUPERCAR POSTER BOY

By 1969 Lamborghini appeared to be ticking over nicely as a car manufacturer, with its flagship model now as mechanically sorted as it could be (in the form of the Miura S), and the four-seater Espada finding customers. But the first rumblings of the troubles that would engulf the company could be felt. Ferruccio's ambitions to offer a broad model range were thwarted by inconsistent quality control and lack of demand for the humbler models, such as the unloved Islero, a follow-up to the 400GT, which sold only 225 examples from 1968 to 1970. New models were in the pipeline, including the front-engined Jarama—a replacement for the Islero with more adventurous styling—and the Urraco, which was to have a 2.5-liter V-8 engine and function as a kind of junior Miura. Unfortunately, the Jarama was destined never to catch on and the Urraco would suffer endless development delays, finally entering production in 1973, three years after its Turin show debut.

Lamborghini needed volume to grow as a manufacturer, yet its production arrangements were still scattershot, with small-scale coachbuilders such as Marazzi building the bodies of cars such as the Islero and Jarama, but struggling to get the quality right. And there were philosophical problems for the Miura, which by rights ought to be the more exclusive "halo" model, and yet was selling in too great a quantity for it to be truly rarefied. Another practical concern was the emergence of rivals from just down the road, and not only from Maranello: to the Ferrari 365 GTB/4 "Daytona" add the Maserati Bora and De Tomaso Mangusta.

So in 1970 Lamborghini's engineers set to work on a successor to the Miura. "Project 112" would be an altogether different car; faster, visually more dramatic, and more technically advanced. Ferruccio had never quite reconciled himself to the presence of a screaming V-12 just behind his head, and his desire for greater separation between the occupants and the reciprocating masses of the engine is one of the reasons given for relocating the engine from a transverse position to a longitudinal one. This, together with an enlargement of the V-12 to five liters, would lead to the car being rechristened LP500 (LP for Longitudinale Posteriore, meaning the engine's alignment and rearward positioning) before ultimately becoming the Countach.



Gandini's early sketches of the LP500 show a beautiful purity of line that had to be compromised in places as manufacturing reality got in the way of idealistic vision. ***Automobili Lamborghini***

Some years later Peter Coltrin, an expatriate American journalist and photographer who was privy to the car's development, would describe Lamborghini's manifesto in *The Motor* magazine:

> It would be a true "macchina sportive stradale"—neither a GT car nor a race car but a car guaranteed to do, among other things, a standing kilometer in 23 seconds or less. It would combine performance with comfort. Performance here was defined as a high power-to-weight ratio, stability and maneuverability. None of these qualities could be neglected, each had to have a well-thought-out approach and solution. The car would not be built to a price. As far as was practicable, cost would be no object to achieve the aims although, as with all things, the line has finally to be drawn somewhere. The car would be sold only to discerning customers, known to the factory—serious enthusiasts who would appreciate the car and know how to use it. A prestige car by its very nature, but not for "status symbol" seekers. Too many of the latter gave the Miura a somewhat tarnished reputation—like pop stars who made headlines by crashing as many as three Miuras and others whose line of "business" didn't exactly enhance the Miura's image.

In this you can see the beginnings of a line of thought that the company remains faithful to today.

Ferruccio again directed his engineers—now led by Paolo Stanzani following the departure of Gian Paolo Dallara—to work closely with Bertone, who would be responsible for the design and build of the bodyshell. The experience of trying to tame the Miura's unruly on-the-limit behavior was as prominent in Stanzani's mind as the need for better insulation from engine noise, and this informed the decision to move to a spaceframe chassis with the engine located on a north-south axis within it. The V-12's new location would make it easier to cool, yield a more optimal exhaust layout, and give better weight distribution—provided it could be packaged within the wheelbase.

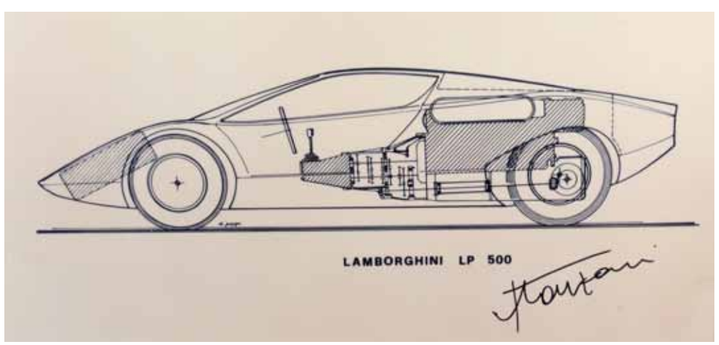
This provided a challenge since V-12s are intrinsically quite long, and with a transmission in the conventional place—aft of the engine—some of the drivetrain's mass would end up behind the rear axle line. Stanzani's clever solution was to turn the whole system around so that the engine's power was output forward to a clutch and gearbox located between the hips of the driver and passenger. As well as improving the car's polar moment of inertia, this gave a more direct connection to the gear linkage (although owners would still require the quads of a power lifter to work the clutch). The disadvantages came in the form of introducing a different form of mechanical noise to the cabin, and a more complex system of transferring motive force from the gearbox to the rear axle, via a shaft through the sump.

At Bertone's studios, Marcello Gandini had already produced one stunning wedge-shaped vehicle, the Stratos Zero, as part of a stealth pitch to Lancia. It had been unveiled, to popular acclaim, at the Turin show in 1970, though some features—such as the large glass windscreen that hinged upward to furnish access to the cabin—were clearly not practical for a series production car. Mercedes had already produced a sports car with gull-wing doors in the 1950s. For the LP500, Gandini began his sketch of the side elevation with a single sweeping, unbroken line from nose to tail; this would dictate the path of every other line, as well as the glasshouse and the proportions of the flanks—and the shape of the doors. For these, Gandini proposed something that had never been seen on a production car: hinging upwards from the front so that they opened like scissors.

Countless show-goers at Geneva in March 1971 expressed sentiments along the lines of *countach!* when they clocked the LP500 prototype, even though many harbored doubts that it could become a workable production car. There were those who believed Lamborghini was simply showing off, and if the exterior wasn't outlandish enough to promote such a notion, then the peculiarly half-finished cabin—with its all-electronic instruments and what looked like the control yoke of an aircraft rather than a steering wheel—was enough to tip some over the edge.

Nevertheless, with the LP500 lining up on the stand alongside the new Miura SV, a revised Espada, the Urraco, and Jarama, Lamborghini seemed a picture of health. The truth was rather different. Even as putative customers lined up to indicate that they'd take an LP500 if Lamborghini built it, pressure was mounting both within and without.

The engineering and development team was stretched too thinly to deliver the Urraco and LP500 to production in the necessary timeframe, and it quickly became apparent that the LP500, in its transition to becoming the Countach, had to be substantially reengineered. This would require substantial investment, just at the time Ferruccio Lamborghini's industrial interests were coming under pressure from the slowing global economy and the beginnings of the energy crisis (oil production in the United States had already peaked when the wraps came off the LP500 at Geneva, and was beginning to decline).



To centralize the weight of the Countach as much as possible, Paolo Stanzani reengineered the transmission to sit ahead of the engine, with the drive output shaft running through the sump. ***Automobili Lamborghini***

Lamborghini's tractor business, the one that had provided the launching point for everything else, was among the first to be hit by declining domestic and international sales—at a time when the company had invested heavily after landing a major order from the socialist government led by Juan José Torres in Bolivia. Then, in a twin blow, the South African importer canceled its orders, while the hundreds of tractors destined for Bolivia were never shipped after Torres was overthrown (with the clandestine backing, some believe, of the Nixon administration in the USA) in a coup d'état led by General Hugo Banzer Suárez. Lamborghini was trapped with a vast quantity of unsold inventory.

Automobili Lamborghini also faced declining sales as customers held on for the Urraco and Countach—cars whose development was stalling for lack of investment. First to feel the pinch was the five-liter version of the V-12. Ongoing difficulties with the Urraco V-8 sucked time and resources, and there wasn't enough money in the pot to make the reworked V-12 reliable enough. But Stanzani was able to redevelop the Countach's spaceframe chassis from its initial iteration as a network of square tubes. The new chassis used thinner round-section tubes, rather like the classic Superleggera designs pioneered by Carrozzeria Touring.

As Bob Wallace clocked up the testing miles on the roads around Sant'Agata and at the Varano circuit to the north, it became clear that the radiators were not receiving enough air from the louvers on the car's "shoulders" to cope with the engine's thermal demands. Stanzani and fellow engineer Massimo Parenti conducted ride-alongs in an effort to understand the Countach's aerodynamics, taking motor-drive photos of it at speed after gluing wool tufts to its flanks, and noting the temperature characteristics with a Telemax gauge.

The LP500 prototype was extraordinarily futuristic; many visitors to the 1971 Geneva show did not believe it would be built. ***Automobili Lamborghini***

Faced with declining sales and unsold stock, the obvious solution would have been for Ferruccio to lay off staff and cut production. But the deals he'd cut with the local government committed him to full unionization, and the unions wouldn't budge. Creditors, also squeezed by recession, began to line up.

As a successful entrepreneur, Ferruccio could duck and dive with the best of them, but this bull had felt more than one touch of the *espada*. He kept most of the creditors at arm's length by reaching cash settlements, but these depleted his resources further. By the end of 1971 it was becoming clear to him that if he wanted to enjoy a comfortable retirement and preserve the Lamborghini legacy for his son Tonino, he would have to cut his exposure to risk, let go of the underperforming businesses, and shore up his personal finances.

In 1972 Ferruccio agreed to sell a 51-percent shareholding in Automobili Lamborghini to one of his customers, Georges-Henri Rossetti. The Swiss, a scion of a wealthy family with business interests in—among other things—watch manufacture, Rossetti was what we would now call a "car guy," a serial owner of sports cars and a sometime Formula 3 racer in his youth. The amount that changed hands was reported to be $600,000.

Ferruccio offloaded the tractor business entirely to one of its main rivals, the Italian S.A.M.E group, for an undisclosed sum, but while he was now a minority shareholder in Automobili Lamborghini he remained a more hands-on presence than Rossetti, who largely governed from afar. In May 1972 Stanzani and Wallace drove the working prototype Countach to Sicily and back to watch the Targa Florio road race, presented the unbroken car to Ferruccio and Rossetti upon their return, and were rewarded with the decision to put the car into production.

Lamborghini demonstrated a second show car version of the Countach, badged LP400 in deference to its use of the existing V-12, at the 1973 Geneva show, but it would not be production-ready until a year later. Some of the purity of Gandini's original design had to be compromised for the sake of engine cooling, so by launch the Countach grew two features that would become distinctive signatures: NACA ducts on each side and boxy air intakes on the shoulders. There were detail changes, too, around the side windows, although they could still not be fully opened. The orange Countach shown in this chapter is one of just 150 to have been built with Gandini's periscope-style rearview mirror, and a similar example fetched $1,210,000 at auction in 2014.

By launch time, Ferruccio had sold the remaining shareholding in Automobili Lamborghini to another Swiss, Rene Leimer, for $400,000 and retired to his Umbrian estate, leaving the remaining businesses in the hands of Tonino. In the three-year gap between show car model and Countach launch, world economies had crashed and gasoline prices had gone through the roof as a result, largely, of conflict in the Middle East. Several countries, including Italy, placed punitive taxes on "gas guzzlers," prompting Lamborghini's new owners to go so far as offering a two-liter version of the Urraco. It was received with little interest.

The yellow Countach prototype is the closest to Gandini's original vision. The production car would gain an NACA duct on each side and bulkier, less elegant air intakes.
Giles Ghapman

Countach LP400

Countach LP400

Chassis	Steel spaceframe
Suspension	Independent double wishbones, coil springs and telescopic shock absorbers, anti-roll bar (front); independent lower double wishbones with upper transverse links and radius arms, twin coil springs and telescopic shock absorbers, anti-roll bar (rear)
Brakes	Ventilated Girling discs
Wheelbase	2450 mm
Front/rear track	1500 mm/1520 mm
Wheels/Tires	14 in × 7.5 in, Michelin XWX 205/70 (front); 14 in × 9.5 in, Michelin XWX 215/70 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	82 mm/62 mm
Cubic capacity	3929 cc
Compression ratio	10.5:1
Maximum power	375 bhp at 8000 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 2 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, 6 Weber DCOE carburettors, 2 coils
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1055 kg
Top speed	196 mph (claimed)

The Countach therefore appeared irrelevant, and it is in this context that we must view some of the press coverage of the time. When *Motor* magazine obtained an LP400 to road test late in 1975, it resulted in the peculiar juxtaposition of a cover photo featuring the car smoking away from the standing start (with a Peiseler "fifth wheel" performance-measuring device hanging off the back) and an editorial that didn't mince words: "Is it the fastest production car in the world? Maybe. The best car in the world? No. But what Lamborghini's Countach does have is charisma, that almost undefinable something that has children falling over its steeply raked nose and adults clamouring to squeeze into its cramped interior. But what else is in its favor? Is it even practical? Like the [Ferrari] Boxer we see this former Geneva show-stopper as one of a dying breed and it is certainly not as useful a device as Lamborghini's own Urraco—itself not quite in the mould of Lotus's 'power with economy' offerings."

One can almost imagine the editor, having composed this rumination, pausing to refill his pipe with Old Holborn and taking a meditative puff. A workmanlike fixation with practicality, which to modern eyes reads akin to a failure of joy and imagination, pervades this and the road test to which it was attached: "Few people gazing at the original Bertone Countach at Geneva in 1971 could have regarded it as anything other than a 'show' car. There were those fold-up doors for a start (how did you get out if the car rolled?) and the space-age cockpit with its abysmal rear visibility . . . it seemed unlikely."

Still, this was published in a Britain where commercial use of electricity had recently been rationed to three days a week, and the motoring press remained parochial apologists for a declining domestic industry, so the authors should perhaps be forgiven for allocating space in the first proper independent performance test of the Countach to mere matters of practicality. On the whole, they rather liked the car, even though it

cost more than a small house and did not meet the claimed performance figures—which they generously attributed to the engine not being properly run-in.

Wholesale change tends to make human beings feel uncomfortable and insecure, and so it was with the factory workforce at Automobili Lamborghini. Some of the more hagiographic accounts of the company's history dwell on Ferruccio's man-of-the-people credentials, and while he was indeed more hands-on than his successors it is unlikely that he spent quite as much time on the factory floor as some authors suggest. The schism between management and workers began as a consequence of the faltering economy before Ferruccio's retirement, and if it widened afterward it was not so much a factor of the new owners' management style as the fact that they were foreigners.

Nor were Leimer and Rossetti able to wrestle with all the financial problems that faced the company. The Urraco was a sales bomb, and the Countach took too long to build (just 23 left the factory in 1974) to satisfy demand, largely because the frame was outsourced to Marchesi and then hand-finished at Sant'Agata, while many minor components that would normally be brought in from outside were expensively hand-made in-house. Stanzani and Wallace left in 1975, feeling that there would be no new

car in the pipeline to get their teeth into, and the new owners hired Gian Paolo Dallara as a consultant to steer development.

On Dallara's watch, Lamborghini produced two special Countachs for private customers—an Italian collector and Canadian Formula 1 team owner Walter Wolf—that would pave the way for the next evolution of the production model. He added a front air dam and rear wing, along with fiberglass wheelarch extensions to accommodate the biggest mechanical change, larger rear wheels. The Michelin XWX boots the LP400 rode on were the largest available at the time, but the 14-inch wheel size these imposed limited the car's braking capacity as well as its road-holding. Pirelli's new PZero enabled Dallara to fit 15-inch wheels and larger brake rotors, and the lower profile of the new tire made for less sidewall squidge under duress.

These, along with some interior changes, fed in to the 1978 Countach LP400S, along with the removal of the periscope mirror and roof groove, and a rather more accurate claim for the V-12's power (353 brake horsepower). But the company was still in trouble; Rossetti rarely visited the factory, and Leimer struggled to manage the competing demands for his time from his own companies and Lamborghini. The strain on Sant'Agata's finances and engineering resources grew when new European Union legislation demanded that all cars offered for sale from 1978 onward had to meet more stringent crash-test regulations in order to gain a type-approval certificate. This killed all but one of Lamborghini's model range at a stroke and resulted in a modest weight gain for the Countach, which had to be offered with the rear spoiler as an optional extra since it would not pass type approval as standard equipment.

At the same time, Lamborghini signed up to two potentially lucrative outside partnerships that would prove catastrophic. It undertook to manufacture BMW's new Giugiaro-styled performance car, the M1, and develop an off-road vehicle codenamed Cheetah for an American company, with a view to obtaining military contracts. These were enough to secure a loan from the Italian government, but both projects would founder; persistent industrial unrest meant very few M1s were built and BMW soon looked elsewhere, while the Cheetah became entangled in an intellectual property dispute between Lamborghini's American client and the Ford Motor Company.

In desperation, Leimer raised a loan from US businessman Zoltan Reti, secured on the factory. Within months Reti wanted his money back and had the company declared bankrupt. As the receivers moved in, Rossetti and Leimer became merely unsecured creditors, ultimately receiving nothing from the company's sale. Lamborghini was lucky that the appointed receiver, Dr. Alexandro Artese, was a car nut who felt it was worth saving rather than breaking up to appease the secured creditors. He recruited Giulio Alfieri, formerly of Maserati, to run the factory and act as chief engineer, and production of the Countach continued.

Only one set of serious buyers for the company came forward, and in January 1981 the assets of Automobili Lamborghini changed hands for $3 million. The new owners, Patrick and Jean-Claude Mimran, were scions of a Franco-Swiss family that had substantial mining and sugar-production interests in Senegal. They set up a new

company, Nuova Automobili Ferruccio Lamborghini SpA, of which 24-year-old Patrick was the president.

Just two months later, the company appeared at the Geneva show with a prototype Alfieri had been developing as an Urraco replacement—the Jalpa, a putative new Miura styled by a Swiss company—and an early version of a pseudo-military off-roader based on the moribund Cheetah. The Mimrans also pushed forward with plans to develop the Countach, and Alfieri oversaw the biggest change the model had seen in a decade.

Keeping in touch with newer rivals such as Ferrari was a difficult proposition because the Countach's distinctive shape was far less streamlined than it looked, particularly with fatter wheelarches and a large rear wing. The obvious tactic would be to unleash more horses. Together with new recruit Luigi Marmiroli, Alfieri expanded the engine to just short of five liters (4,754 cc), enabling the new LP500S model to achieve a real-world top speed of around 180 miles per hour. They improved the interior accommodations too, by raising the roof 1.2 inches.

In the wider world, the Countach rose the conspicuous-consumption zeitgeist of the 1980s. Incredibly, in a fast-forward decade where the fashions, chattels, and philosophies of previous eras were declared axiomatically ungood, a car designed in the early 1970s continued to be the defining object of automotive lust. Posters featuring it took pride of place on the bedroom walls of billions of teenagers.

The Countach moved with the bubble-permed times by becoming ever more dramatic: bigger wheels, bigger arches, bigger wings. Yet more power was required to push this increasingly muscular piece of road-going real estate through the air, and because of limited space in the engine compartment, turbocharging wasn't an option. The engine itself would have to grow.

GIULIO ALFIERI

An engineer with impeccable pedigree, Giulio Alfieri joined Lamborghini in 1978 as he began the glide path toward retirement, but his work at Sant'Agata was no less notable than it had been over the preceding three decades. Born in Parma in 1924, he studied engineering in Milan, graduating during the turmoil of the postwar years.

After initially finding work building steam turbines for nautical use, Alfieri joined Innocenti, maker of the iconic Lambretta scooters, in 1949. Four years later he moved to Modena to work alongside the likes of Gioacchino Colombo at Maserati. It was a chaotic time, since the company was developing its promising and potentially lucrative 250F Formula 1 car at the same time that owner Adolfo Orsi juggled the finances to stay afloat. Alfieri was involved in the design of the 250F's 2.5-liter straight-six engine and would work on a string of other iconic Maserati projects, including a V-12 engine (which ultimately saw service in Formula 1 in the late 1960s) and the beautiful lightweight Tipo 1 "Birdcage."

Alfieri remained at Maserati through financially turbulent times. Orsi's supposedly lucrative contract to supply machine tools to Argentina brought the company to the brink of ruin, as a similar deal with South America would cripple Lamborghini two decades later: Argentine dictator General Peron was toppled in a coup d'état and his successors never paid the bill. This left Maserati owing Italian banks a fortune, and by 1958 Credito Italiano was calling for Orsi's head. The company stumbled on until it was acquired by French automaker Citroen, first as a minority shareholder in 1967 and then outright in 1971.

Alfieri enjoyed another fruitful period, overseeing the Maserati Merak, Khamsin, and Bora as well as a V-6 engine in two displacements for Citroen's flagship sports saloon, the futuristic SM. But the relationship was not to last. The oil crisis of the early 1970s killed sales of gas-guzzling machinery, and Maserati's production was hit by the same kind of industrial unrest that bedeviled Lamborghini. Citroen's bean counters cried "enough" in 1975, declared the company bankrupt, and made the workforce redundant.

Maserati existed in limbo again, bankrolled by a government-backed holding company and a new minority shareholder, the colorful character Alejandro De Tomaso, who proposed a ruthless medicine: cutting around 50 percent of the workforce. Alfieri was among that number, reputedly finding the contents of his office waiting for him in the car park as he arrived for work.

At Lamborghini, Alfieri found himself in a classic out-of-the-frying-pan-into-the-fire scenario until new investment from the Mimran brothers gave the company sufficient financial security to invest in the model range. As technical director, Alfieri developed the new Jalpa model and oversaw the Countach's rebirth as a 1980s icon, eventually retiring after the Chrysler takeover in 1987. He passed away in 2002, shortly before his 78th birthday, after a short illness.

Marmiroli and Alfieri had been working on a seven-liter development of the V-12 for use in the military off-roader and fed some of the lessons into one that could be shoe-horned into the Countach. Keeping the same bore as the existing unit but expanding the stroke from 69 to 75 mm gave a swept volume of 5,167 cc, and this, along with new heads featuring four valves per cylinder, gave a more even power curve, which peaked at between 455 and 470 brake horsepower.

The 5000 Quattrovalvole appeared in 1985, sporting several Kevlar panels to offset the increasing bulk, and with a bulging engine cover that made the contents of the rearview mirror even more academic. The question now was: Could the car attain the 200 miles per hour that had been claimed back in Geneva, 1971?

In a story for *Fast Lane* magazine in 1986, noted writer Peter Dron described a stealth drive on an *autostrada* with Pierluigi Martini (soon to become a Formula 1 driver and Le Mans winner) where he used kilometer markers to calculate the QV's top speed: "Martini talks of regularly having seen 320kmh (roughly one digit short of 200mph) on his speedometer, even at night. The pop-up headlights, he claims, make very little difference to the drag factor. Once, he says, the reading was 325kmh.

"This is the sort of wild, fanciful stuff we have heard about the QV5000S for some time. Frankly it is hard to believe, but if we can find a break in the traffic, we'll put it to the test."

That they duly did. He continued:

> In our ignorance of the Countach, we not only disbelieved the performance claims for it, but we also believed that myth about the car being unstable at high speed without the wing fitted. That may have been true of the earlier version, but it certainly doesn't apply to the Quattrovalvole which runs arrow-straight at its maximum speed. . . .
>
> We try again and again, but each time we are baulked as the inevitable man in a little Fiat pulls out to pass a truck, all the while almost facing his lady passenger. . . . Finally, we turn off on to a different autostrada. It's clear, and the rev needle is flickering wildly just inside the red sector, and the speedometer is reading 320kmh. This is it.
>
> We pass the first kilometer post. Those tiny specks in the far distance are beginning to be identifiable shapes. Soon, though they would not be aware of it even if they used their rear-view mirrors, they could become a braking area. Click! We pass the second kilometer post and Piero is safely, very firmly on the brakes. We've covered a flying kilometer in 11.46sec, which is 314.1kmh metric, 195.2mph imperial, and bloody quick in anyone's language. Countach!

Six hundred and thirty-one units of the QV5000S would be built. Lamborghini was on a high in 1986 as the Mimrans entered negotiations to sell the company to Chrysler. The 200-miles-per-hour barrier still beckoned, and during 1987 Alfieri

worked on a mobile test bed known as the Evoluzione, which featured a racing-style aluminum monocoque and aluminum panels.

Though scoop photos led many to believe this was a new Countach model, it was little more than an engineering exercise, and the sole example built was destroyed in a crash test. The Mimrans sold out to Chrysler in May 1987 for $33 million, a handsome profit, and the company's first act under new ownership was to titivate its flagship model.

The Countach Anniversary, unveiled in 1988, celebrated a remarkable quarter century since Lamborghini's founding. Some of the bodywork additions (by Horacio Pagani) proved controversial among Lamborghini purists, but the greater use of carbon fiber prefigured Lamborghini models to come. As the silver example shown in this chapter demonstrates, the instant signifiers of the Anniversary are the straked rear shoulder airboxes, along with a larger rear bumper to satisfy US safety regulations. Those who bought the car to drive rather than tuck away as an investment found more pleasantly appointed, electrically adjustable seats in the cabin.

This latter element was seen as a mark of increasing US input into the development process. What, the world wondered, would the successor to the Countach look like now that Lamborghini was in American hands?

Countach Quattrovalvole / Anniversary

Chassis	Steel spaceframe
Suspension	Independent double wishbones, coil springs and telescopic shock absorbers, anti-roll bar (front); independent lower double wishbones with upper transverse links and radius arms, twin coil springs and telescopic shock absorbers, anti-roll bar (rear)
Brakes	Ventilated ATE discs
Wheelbase	2500 mm
Front/rear track	1536 mm/1606 mm
Wheels/Tires	15 in × 8.5 in, Pirelli P7F 225/50 (front); 16 in × 12 in, Pirelli P7F 345/45 (rear)
Anniversary	15 in × 8.5 in, Pirelli PZero 225/50 (front); 16 in × 12 in, Pirelli PZero 345/35 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	85.5 mm/75 mm
Cubic capacity	5167 cc
Compression ratio	9.5:1
Maximum power	455 bhp at 7000 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, 6 Weber DCNF carburettors, electronic ignition
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1490 kg
Top speed	184 mph (claimed)

Countach Quattrovalvole

Countach LP400 S	
Chassis	Steel spaceframe
Suspension	Independent double wishbones, coil springs and telescopic shock absorbers, anti-roll bar (front); independent lower double wish-bones with upper transverse links and radius arms, twin coil springs and telescopic shock absorbers, anti-roll bar (rear)
Brakes	Ventilated Girling discs
Wheelbase	2450 mm
Front/rear track	1492 mm/1606 mm
Wheels/Tires	15 in × 8.5 in, Pirelli P7 205/50 (front); 15 in × 12 in, Pirelli P7 345/55 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	82 mm/62 mm
Cubic capacity	3929 cc
Compression ratio	10.5:1
Maximum power	353 bhp at 7500 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 2 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, 6 Weber DCOE carbu-rettors, 2 coils
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1200 kg
Top speed	177 mph (claimed)

Countach LP500 S	
Chassis	Steel spaceframe
Suspension	Independent double wishbones, coil springs and telescopic shock absorbers, anti-roll bar (front); independent lower double wish-bones with upper transverse links and radius arms, twin coil springs and telescopic shock absorbers, anti-roll bar (rear)
Brakes	Ventilated ATE discs
Wheelbase	2450 mm
Front/rear track	1492 mm/1606 mm
Wheels/Tires	15 in × 8.5 in, Pirelli P7 205/50 (front); 15 in × 12 in, Pirelli P7 345/55 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	85.5 mm/69 mm
Cubic capacity	4754 cc
Compression ratio	9.2:1
Maximum power	375 bhp at 7000 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 2 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, 6 Weber DCOE carbu-rettors, electronic ignition
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1490 kg
Top speed	186 mph (claimed)

DIABLO

LAMBORGHINI HAD RETURNED TO HEALTH under the Mimran brothers, but it was going to need another round of investment if it was to replace the Jalpa model and, perhaps more importantly, the aging Countach. Though Gandini's remarkable wedge had made a seamless transition across the decades, remaining aloof and aspirational through changing fashions, there were challengers to its crown of unattainability. Ferrari's F40 and Porsche's 959 arrived as genuine 200-miles-per-hour supercars, a Rubicon of speed the draggy Countach was unable to cross.

THE SUPERCAR REFINED

Chrysler's multimillion-dollar acquisition of Lamborghini in April 1987 seemed to guarantee Sant'Agata's future. Nuova Automobili Ferruccio Lamborghini SpA's assets were transferred to a new holding company, Automobili Lamborghini SpA, and a new group of go-ahead directors entered the boardroom, led by Lee Iacocca, the son of Italian immigrants. Iacocca was the poster boy for automotive Reaganomics, having secured massive loans to prop up Chrysler when it was on the brink of bankruptcy in 1978, and subsequently turned the company around. He was used to getting his own way, and when the board meeting decision to purchase Lamborghini was described as "unanimous," you can imagine that the majority of executives present took the career-minded view of agreeing with the boss.

Understandably, the Mimrans had closed down the investment taps in anticipation of the sale, so development of what would become the Diablo stalled when it had barely gotten started. Even so, Chrysler executives set a target of the last quarter of 1988 for the car's launch. This deadline started to slip almost immediately as Chrysler mulled over what it actually wanted Lamborghini to be and how much money it wanted to invest in its new acquisition. The board pondered three options: Lamborghini as a fully self-funded entity; Lamborghini as a halo brand to be added to badge-engineered mass-production "sports" models; or a rapid-growth strategy to bring a still-autonomous Lamborghini up to Ferrari's size quickly, selling more than 2,500 units a year. The first option was dismissed, wisely, on the grounds that it offered insufficient opportunity for growth. Equally wisely, the second option of mounting a branding smash-and-grab was also kicked out, on the grounds that it would quickly devalue the brand—rather like the ghastly Ford Mustangs of the 1980s and '90s.

Diablo VT Roadster

Diablo Roadster	
Chassis	Steel spaceframe with composite panels
Suspension	Independent double wishbones front/rear, coil springs and telescopic shock absorbers, anti-roll bars
Brakes	Ventilated Brembo discs
Wheelbase	2650 mm
Front/rear track	1540 mm/1640 mm
Wheels/Tires	17 in × 8.5 in, Pirelli PZero 245/40 (front); 17 in × 13 in, Pirelli PZero 335/35 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	87 mm/80 mm
Cubic capacity	5707 cc
Compression ratio	10:1
Maximum power	492 bhp at 6800 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder
Fuel/ignition system fuel injection	Dual Bendix pumps, Lamborghini electronic
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1625 kg
Top speed	201 mph (claimed)

Chief engineer Luigi Marmiroli therefore had a lot of work on his hands. He already had a four-liter V-10 on the bench for the putative new Jalpa, known internally as the P140, and he had to finesse the Countach Anniversary model before restarting the Diablo project. Lamborghini engaged Marcello Gandini to create styling proposals, and by summer 1988 he had produced a full-scale model.

Gandini's proposal did not lack drama, as he relocated the "shoulder" air scoops to the rear deck, with smaller intakes featuring fan-like strakes of diminishing size in the rear three-quarter panel. The side windows plunged downward at the leading edge, and the engine cover was largely glass, while the line of the rear wheelarches swept back toward the taillight cluster, as on Gandini's Citroen BX hatchback.

The arrival of the Cizeta Moroder V-16, a limited-run V-16-engined supercar bankrolled in part by music producer Giorgio Moroder, caused ructions between Gandini and his clients. Gandini had recycled his ideas from the original Diablo proposal into that car while the Diablo was in limbo. Now Chrysler directed him to amend his proposal so that the Diablo would not look too similar when it ultimately hit the streets.

Cizeta would eventually go bust after making just a handful of cars, but in the supercar boom time of the late 1980s nobody could have anticipated that another oil price shock was on the way. The relationship between Sant'Agata and its new paymasters became afflicted with not-invented-here syndrome, and as Gandini and Marmiroli created a working prototype for road testing, the Chrysler executives began to consider getting their own people involved. Lamborghini President Emile Novaro, returning to the business after a serious car accident in 1987, fought to keep his engineers in charge of the project.

The first prototype Diablo, powered by a development of the familiar Quattrovalvole 5.2-liter V-12 and bearing heavy disguise to make it resemble a Countach from a distance, hit the test track at Nardo early in 1989 with Valentino Balboni at the wheel.

Though a clear improvement on the Countach, it still lacked top speed. Marmiroli's team took a two-pronged approach to solving this challenge, aiming for more power and better aerodynamics. Thus, the Bizzarrini V-12 grew again, this time to 5,729 cc, with a bore and stroke of 87 millimeters x 80 millimeters. At the same time, the gearbox was redesigned in a more forward position, offering an even shorter linkage, and the output shaft was relocated to the right so that the driveshaft ran alongside the sump rather than through it.

Chrysler wanted more aesthetic changes and these, somewhat to Gandini's chagrin, were performed by design vice president Tom Gale's team in Detroit. Few could argue with the finished look of the Diablo, though: slightly more soft-edged, less heavy around the hips, and not so slab-sided, with the rear air intakes integrated more neatly and glass replacing the fanned three-quarter panel. It was a design that would survive the passing of time better than the à la mode Cizeta, and Gandini liked it enough to allow his signature to be featured on the flanks of production models.

Gandini's original vision may have been diluted somewhat, but the windtunnel figures spoke for themselves: a drag coefficient of 0.31 compared with the Countach's brick-like 0.42. Unfortunately the Diablo was also heavier, for a number of reasons. It was bigger than the Countach by 6 inches in the wheelbase and was 1.4 inches taller (though still only 43.5 inches high). It was better equipped and more lavishly upholstered, with fully retractable electric-powered windows; their downward slope at the front, retained from Gandini's proposal, gave a much better field of view from the wing mirrors. The mechanical layout of the front end was designed so that the Diablo could be offered in four-wheel-drive form, though the car was rear-wheel drive only until 1992. And crash regulations—particularly in the US—had moved on during the 1980s, so while the chassis followed established Lambo spaceframe practice, it used square tubes rather than round ones, and was reinforced in places with composite panels in an effort to mitigate the weight gain caused by the additional bracing. Likewise, the frame was dressed in aluminum alloy for the doors and quarter panels, and a carbon-glassfiber composite material for the louvered engine cover, hood, and bumpers.

Besides more mod cons for the cabin and a greater quality of fit and finish, contemporary supercar buyers expected a better class of mechanical refinement. That meant abandoning race-style rose joints, and the suspension was redesigned with anti-dive and anti-squat geometry, and to mount to the body via rubber bushes.

The Diablo also gained hidden bulk in the form of the three-way catalytic convertor that was now mandatory in most markets. In turn, that meant the 5.7-liter V-12 bid farewell to the Weber family of carburetors that had served so well, replaced by a new Weber-Magnetti Marelli multipoint fuel injection system.

The question on most testers' lips, then, as the Diablo charged out of the gates at a gala Monte Carlo launch in January 1990, was whether the greater muscle (from 455 brake horsepower in the outgoing Countach to 492 brake horsepower) and slipperier aero could outweigh the 361 pounds it had gained over its predecessor. This

was a critical moment; two weeks before the Diablo's launch, Ferrari announced it had gained type approval to export some of the F40 production run to the United States.

Deliveries began in September, and the initial response was largely positive. Peter Robinson, *Autocar* magazine's European editor, wrote:

> Lamborghini's new Diablo is a supercar of stirring contrasts: an outrageous and extravagant car so intense in its emotions and personality no Japanese manufacturer would ever contemplate production of such a vehicle. Contradictions abound, flaws are both plentiful and obvious—and a couple are unforgiveable—but as a successor to the legendary Countach, Lamborghini has the Diablo's priorities appropriately apportioned.
>
> A Ferrari Testarossa's 390bhp is but a wimp in comparison with an engine that pumps out 492bhp at 7000rpm, and an even more impressive 428lb ft of torque at 5200rpm. . . . The fluency of its turbine-like sound at low revs highlights a smoothness that is only matched by the very best large-capacity, multi-cylinder motorcycle engines.

Diablo SV

Diablo	
Chassis	Steel spaceframe with composite panels
Suspension	Independent double wishbones front/rear, coil springs and telescopic shock absorbers, anti-roll bars
Brakes	Ventilated Brembo discs
Wheelbase	2650 mm
Front/rear track	1540 mm/1640 mm
Wheels/Tires	17 in × 8.5 in, Pirelli PZero 245/40 (front); 17 in × 13 in, Pirelli PZero 335/35 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	87 mm/80 mm
Cubic capacity	5707 cc
Compression ratio	10:1
Maximum power	492 bhp at 6800 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, Lamborghini electronic fuel injection
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1576 kg
Top speed	204 mph (claimed)

Diablo SE	
Chassis	Steel spaceframe with composite panels
Suspension	Independent double wishbones front/rear, coil springs and telescopic shock absorbers, anti-roll bars
Brakes	Ventilated Brembo discs
Wheelbase	2650 mm
Front/rear track	1540 mm/1640 mm
Wheels/Tires	17 in × 8.5 in, Pirelli PZero 245/40 (front); 17 in × 13 in, Pirelli PZero 335/35 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	87 mm/80 mm
Cubic capacity	5707 cc
Compression ratio	10:1
Maximum power	492 bhp at 6800 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, Lamborghini electronic fuel injection
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1451 kg
Top speed	205 mph (claimed)

The Chrysler-designed interior met with approval, though the style would date rather quickly, but as with Lamborghinis past the footwells were too narrow and the ergonomics suboptimal.

"The trouble is the wheel juts out on a long column," wrote Robinson, "and its thick rim does its very best to hide the top row of small dials and splits the speedo and tacho in half. The entire binnacle is adjustable, as is the wheel, but the range available only allows you to decide which dials you prefer to be hidden."

No road testers were able to find a clear enough stretch of asphalt to test Lamborghini's claimed 202 miles per hour (which the indefatigable Balboni has since admitted he achieved with the mirrors and windscreen wipers removed and no rear wing, which must have been an interesting experience at Nardi's curved circuit). But

there were no complaints about the car's performance characteristics or general attitude. The main flaw, as Robinson pointed out, was the steering, which lacked self-centering action and was often too heavy.

Regardless of how the Diablo rated in comparison with its rivals, events on the geo-political stage in 1990 would have a greater effect on it and the health of the company. Japan's stock market crashed after the government took belated action to rein in an economy that was in the grip of a speculative bubble. Many major European markets also lurched into recession. On August 2, tensions in the Middle East came to a head as Iraq invaded neighboring Kuwait, causing the price of crude oil per barrel to more than double. After the excess of the 1980s, the hangover had set in. Conspicuous consumption in the form of supercar ownership fell out of fashion, walloping sales of the Diablo and many others of its ilk.

Chrysler was also in trouble. In the boom years it had tried to diversify by acquiring the likes of Gulfstream Aerospace as well as Lamborghini and the American Motors Corporation, but these had saddled the company with huge debts; it sold Gulfstream in 1989, but this wasn't enough to alleviate its financial difficulties.

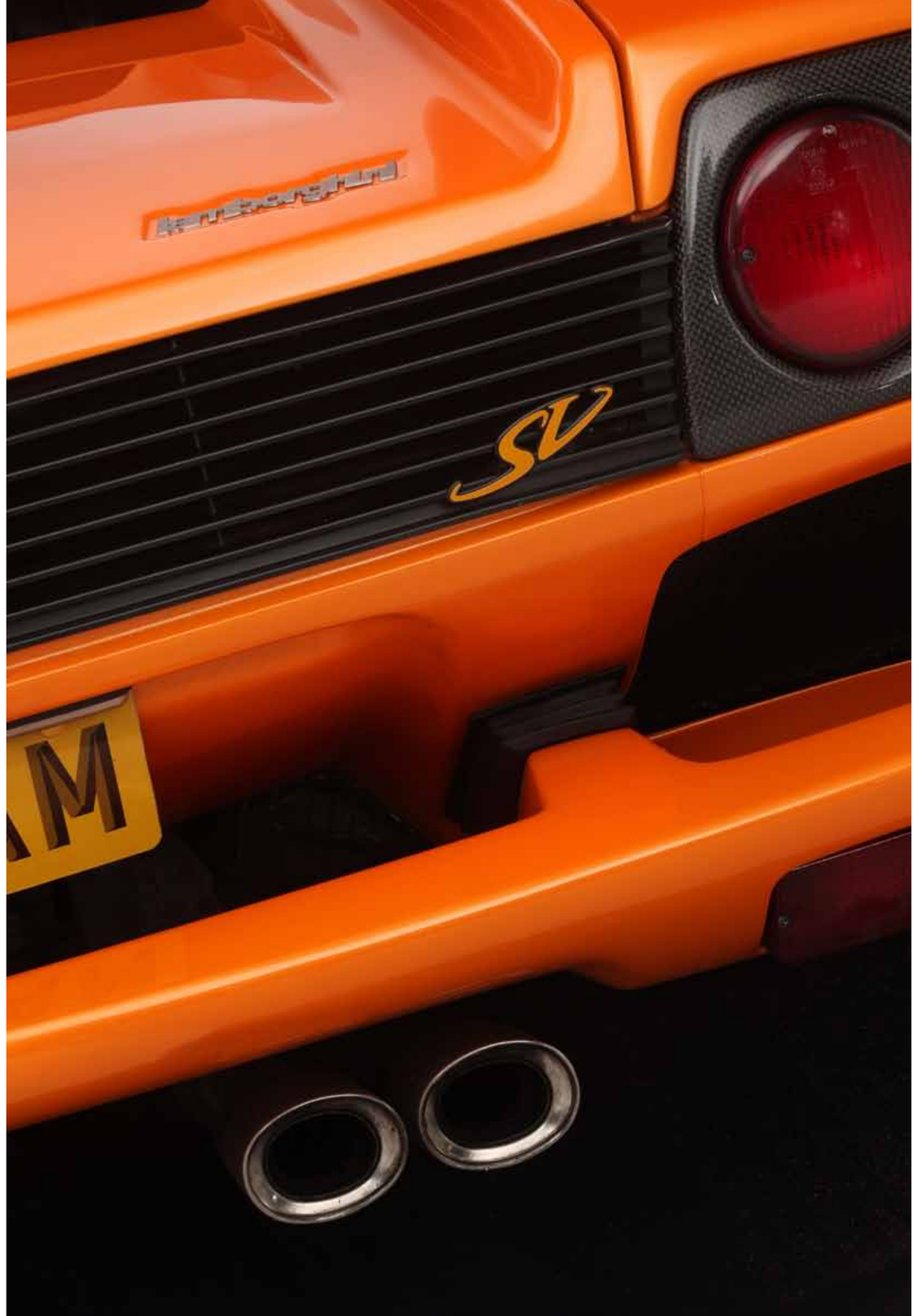
Although the Diablo had a healthy post-launch order book, by the time deliveries began in September 1990 Chrysler had already tasked the investment bank J.P. Morgan with sounding out potential buyers for Lamborghini. Word soon got around the auto industry that the company was up for sale once more, with obvious consequences for morale at Sant'Agata.

Worse still, early Diablos suffered overheating problems and fading brakes, along with generally indifferent build quality. With onward investment from Chrysler drying up—the Formula 1 engine project was left to wither on the vine, and the new building to house the P140 production line would remain empty for years—Lamborghini management redeployed staff from P140 development to get the Diablo build sorted. The "baby Lambo" project would remain in stasis for the better part of a decade.

Gandini produced an open-top Roadster prototype with a cut-down windshield for the 1992 Geneva Motor Show, but this model would not be built on Chrysler's watch. Instead, Lamborghini used its scant resources to finalize the all-wheel-drive Diablo VT for launch the following year. The center-mounted viscous coupling (derived from the unloved LM002 off-roader) directed up to 25 percent of the engine's torque to the front wheels when the rears broke traction—an occurrence that required the driver to operate on a spectrum in the gray area between bravery and stupidity. The four-wheel-drive hardware added weight, but since the intrusive transmission tunnel was common to all Diablos, it had no further effect on a footwell so tight that drivers with feet bigger than a size 10 often had to remove a shoe. Mechanical improvements common to both Diablo models included a new nose treatment that improved front-brake ventilation, uprated calipers, electronically adjustable dampers, power steering, and a dashboard where most of the instruments were visible.

Unsold Diablos piled up during the recession and the company hemorrhaged money while unionized staff members were paid to arrive and do little work. Over in Detroit, changing politics in the boardroom eroded Iacocca's power, and he was edged into retirement at the end of 1992. Any will to retain Lamborghini followed him out the door.

In January 1994 a consortium of three Bermuda-based, Indonesian-owned companies, all of which had ownership ties to Hutomo "Tommy" Mandala Putra—the son of Indonesian President Suharto—and multimillionaire Setiawan Djody paid a reported $40 million for Lamborghini. A lead article in the New York Times asked, "Is the purchase of Italy's Lamborghini a $40 million toy for the son of Indonesia's President Suharto and his friends or rather the core of a Malaysian-Indonesian joint venture to create a local automotive industry?" The author took a straw poll among analysts and concluded that the former was most likely. "'It's plausible, but you have to ask whether this is the most cost-efficient way to start an industry,' said Louis Bailoni, luxury-car



analyst with DRI Automotive Group in Britain. 'It would make a lot more sense to just go out and buy the engines you want for your cars.' Another London auto analyst, asking not to be named, said that buying Lamborghini in order to launch a local car industry was 'ludicrous' and 'a very strange way of doing it.'"

Djody had big plans to create a new car for the Indonesian market under the Megatech brand, along with a new Lamborghini semi-amphibious vehicle to be called the Borneo. He and Suharto installed former Lotus, Jaguar, and General Motors executive Mike Kimberley to run Sant'Agata, and a most peculiar epoch began.

As the global economic outlook started to improve, Lamborghini celebrated its 30th anniversary in 1994 with a race-style limited-edition Diablo, the SE30. In the grand supercar tradition of offering less while charging more, the SE30 went without luxuries such as the air con, stereo, power steering, and electric windows, while the side glass was also exchanged for fixed plexiglass with an inset sliding vent. Composite bucket seats and multipoint harnesses added to the stripped-out racer feel, while a revised (and noisier) exhaust, new inlet manifolds, and different fuel metering helped liberate more horses, taking engine power to 523 brake horsepower. One hundred and fifty SE30s are believed to have been built, of which around 15 were converted to an out-and-out race spec by means of a factory "Jota" conversion kit that included, among other hardcore modifications, an even louder exhaust for those owners determined to cultivate tinnitus.

We say "believed" and "around" because during the Megatech era, for reasons unknown, many of Lamborghini's historical documents were consigned to the shredder. Sales and production figures have had to be pieced together subsequently from other sources.

As with previous heads of the company, Kimberley identified that Lamborghini needed to offer more than one core model to turn a profit. The bottom line was that it had to build more cars, and Kimberley announced plans to double production. He was starting from a low base—little more than 200 Diablos were departing Sant'Agata per year.

To broaden the Diablo's appeal, Lamborghini introduced a new entry-level model at the 1995 Geneva show. The SV badge harkened back to the Miura era and combined a modest power hike (to 510 brake horsepower) with two-wheel drive and an adjustable rear spoiler. The much-delayed Diablo VT Roadster arrived at the Bologna Motor Show at the end of 1995, and featured bespoke 17-inch magnesium wheels and a targa roof that mounted above the engine lid when removed.

By early 1996 Kimberley was briefing journalists that the owners planned to invest $155 million in the coming years to fund the new off-roader, a "baby Diablo," and a "new Diablo" that would probably be a reworked version of the existing car. This investment never arrived and the new products remained largely on paper, though Zagato, Gandini, and Italdesign produced prototypes for the proposed volume model.

Kimberley had also recruited a clutch of British designers and engineers he had worked with in the past, including McLaren F1 stylist Peter Stevens, and their arrival

was greeted with as much suspicion as the Chrysler-led American invasion of the late 1980s. Very little of his planned new model push would come to fruition, though, because even though sales improved the company was still operating in the red. The owners restructured the ownership of Lamborghini among their various companies, and in August 1996 recruited Fiat executive Vittorio Di Capua as joint vice president with a mandate to cut costs. He and Kimberley failed to agree on financial projections, and Kimberley, who felt that the owners had lost confidence in him, handed in his notice that November. Di Capua was promoted to CEO.

Di Capua pushed on with cost-cutting measures, and the axe swung on several senior managers. Others, including Marmiroli, sought employment with better long-term prospects elsewhere, though very able engineers such as Massimo Ceccarani remained on the engineering team. But when the Indonesian economy crashed as part of the wider Asian financial crisis in 1997 (during which President Suharto was driven from office), Lamborghini found itself trapped in its own corporate Groundhog Day, repeating the hand-to-mouth financial traumas of the late 1970s.

Salvation arrived in the form of the Volkswagen Group, which had not only weathered the various economic slowdowns of recent years but had added some of the casualties—such as Bugatti—to its war chest. In trying to restart the P140 project within a reasonable timeframe and budget, Di Capua had entered tentative negotiations with Audi, one of VAG's premium brands, to use its V-8 engine and well-regarded Quattro all-wheel drivetrain in the P140.

At that time VAG was the fiefdom of Ferdinand Piëch, grandson of Ferdinand Porsche and chief engineer of the iconic Porsche 917 sports car. Piëch cultivated an interest in acquiring Audi—he was on something of a shopping spree, since VAG was in the process of buying Bentley—and after protracted negotiations Lamborghini came in to Audi ownership in the summer of 1998 for a sum estimated to be in the region of $18 million.

Diablo VT

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Diablo VT

If anyone had misgivings about the direction the company would take under its new owners—and whether Audi was committed to the level of investment required to make Lamborghini strong again—those misgivings would be dispelled over the coming years, as detailed in later chapters of this book. Audi quickly set out a new model program but also, in the grand tradition of Lamborghini run-out models, reengineered many elements of the Diablo to create the most extreme variant yet.

The SV, VT, and Roadster models were facelifted, with a new cabin and a front-end treatment featuring lights sourced from Nissan's parts bin to replace the old pop-up units, and revised suspension geometry and tuning to improve its on-road demeanor. Eighteen-inch wheels allowed bigger brake rotors to be fitted, and ABS joined the equipment list. Power output rose to 529 brake horsepower.

At the Frankfurt Motor Show, Audi unveiled the limited-edition GT model, a wild race-bred variant with extensive carbon fiber, three-piece OZ wheels, and a roof-mounted engine air intake. Stretched to six liters, the V-12 generated 575 brake horsepower at 7300 rpm—at which point, thanks to a revised exhaust system, everyone within a radius of several miles would know about it. Collectors snapped up the 80 examples of this very quickly, and demand was also high for the race-ready GTR variant that Audi showed at Bologna. Even more rare—only 40 units would be built—the GTR had a full roll cage, Speedline wheels, and a race exhaust, and its engine was tuned to 590 brake horsepower via the addition of a sophisticated new inlet system with variable valve timing. Some of this car's more carefree owners even raced it in the Lamborghini Super Trofeo, a one-make series organized by the promoters of the FIA GT Championship.

For the 2000 model year Audi placed the six-liter engine in the standard VT in a milder state of tune (543 brake horsepower), made some further cosmetic changes, and managed to free up more space in the footwells. Changing the pedal box required some retooling but served as a signal of intent that from now on the driver accommodation would no longer be an afterthought.

There was no doubt that the final Diablo was the best yet, but in some aspects it was still behind the times—and its leading competitors—as related by Larry Webster in a July 2000 *Road & Track* magazine test of the VT:

> Despite the fact the rear tires—Z-rated Pirelli P Zeros, good for more than 200 mph—are so wide that, at first glance, they appear to form a solid rolling pin of rubber across the rear of the car, 543 horses and 457 pound-feet of torque can reduce them to pudding. To counter that possibility, the Diablo VT's four-wheel-drive system makes perfect sense. A viscous coupling transfers power to the front wheels if the rears slip; the rest of the time, the Diablo prowls about as a rear-drive car. At most, 28 percent of engine torque is routed to the front wheels. There are no levers to switch or buttons to punch to engage this four-wheel-drive system, and during routine driving, you'd never know this wild Italian was a four-wheeler.
>
> Perform a drag-strip launch, however, and you'll instantly realize the Diablo VT is not a rear-driver. Usually, those of us who drive in hard acceleration tests rely on a touch of wheelspin to get the car moving in the quickest manner. In a four-wheel-drive car with sticky tires, it is almost impossible to get those rears spinning in a hard launch, unless the car has a system that allows some initial rear wheelspin before the fronts get the juice. An example of one such car is the 1997 Porsche 911 Turbo S. Hold the gas pedal down to create 4500rpm in that sports car, then drop the clutch, and the rear tires will spin for a moment before power is directed to the front wheels; the tires dig in and you're off. In that Porsche, we've recorded 0-to-60-mph blasts in an amazingly fast 3.7 seconds.
>
> But we've tested just one Diablo VT before (C/D, September 1994), because they are very tough to come by—just 23 were sold in the U.S. in 1999, apparently to people who own small countries or athletic shoe companies, at a price of about $275,000. At that test, we declined to risk the dropped-clutch technique, figuring the Diablo's massive tires (235/40ZR-17s up front and 335/35ZR-17s at the rear) and substantial weight (3900 pounds) would result in gobs of traction and no wheelspin. More to the point, there's a good chance that revving the engine and dumping the clutch would fry the clutch and possibly destroy it, and we did not want to find out what that repair bill would look like. A good guess is somewhere in the vicinity of $9000.

The inability to spin the wheels of your Diablo to achieve an optimal getaway compared with a Porsche sounds like the epitome of a first-world problem. But traction-compromised enthusiasts need not have worried: better launches were just part of the package of improvements that would flow from the revitalized Sant'Agata in coming years.

Diablo 6.0

Chassis	Steel spaceframe with composite panels
Suspension	Independent double wishbones front/rear, coil springs and telescopic shock absorbers, anti-roll bars
Brakes	Ventilated Brembo discs
Wheelbase	2650 mm
Front/rear track	1610 mm/1670 mm
Wheels/Tires	18 in × 8.5 in, Pirelli PZero 245/35 (front); 18 in × 13 in, Pirelli PZero 335/40 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	87 mm/84 mm
Cubic capacity	5992 cc
Compression ratio	10.7:1
Maximum power	492 bhp at 6800 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder
Fuel/ignition system	Lamborghini electronic fuel injection
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1625 kg
Top speed	205 mph (claimed)

LAMBORGHINI IN FORMULA 1

Anyone who had sneaked in under the Estoril fence that day in September 1993 would have known something strange was going on. Plain white car, driver in a distinctive yellow and green helmet, bellowing multi-cylinder engine: Ayrton Senna was testing the McLaren Lamborghini.

Sadly, this wasn't to be the beginning of a great journey, but the beginning of the end.

The timing of Chrysler's acquisition of Lamborghini had coincided with a period of unease about the dominance of turbocharged engines in Formula 1 motor racing. Motorsport's governing body, the FIA, was progressively clamping down, imposing fuel capacity and boost pressure limits, then announcing an outright ban from the 1989 season onward.

Late in 1987 Gerard Larrousse, twice a winner at the Le Mans 24 Hours and founder of his eponymous F1 team, approached former Ferrari designer Mauro Forghieri with a view to him designing an F1 engine with Lamborghini backing. Sant'Agata, flush with the prospect of new investment, bought in to the idea and established a new division, Lamborghini Engineering, to build the engine.

The new F1 V-12—an 80-degree design, unrelated to the venerable Bizzarrini one—was ready by mid-1988 and duly made its race debut in the back of Larrousse's pair of Lola chassis at the Autódromo Internacional Nelson Piquet in March 1989. Lamborghini's involvement was purposefully low-key, working with a mid-ranking team purely as a supplier, and doing so at arm's length thanks to the existence of Lamborghini Engineering.

Even so, the season was a disappointment. Philippe Alliot scored the team's only points finish in Spain, while a revolving door policy held sway in the adjoining garage: Yannick Dalmas, a promising talent before falling victim to Legionnaire's disease in 1988, failed to qualify on several occasions before being "let go"; Eric Bernard stood in for two races before retreating back to F3000; and then former title challenger Michele Alboreto completed the final eight rounds without troubling the points.

Lamborghini's own official history places the blame at Larrousse's door: "The fault for these poor results lay above all with the French team, which did not have the money and organization required to compete at the highest levels." Fair enough, but the engine was overweight and not best reliable, as demonstrated on more than one occasion, not least when Bernard's blew up as he was running fifth at Silverstone.

Still, the engine had potential, and since the only other ones available to customers at an affordable rate were demonstrably puny V-8s, Lamborghini gained Lotus as a customer for 1990. With development came results, the best of which was Aguri Suzuki's podium finish in front of his home crowd at Suzuka in the maligned Larrousse.

Lamborghini was also proceeding at full steam with its own F1 chassis, commissioned by an ambitious young Mexican businessman named Fernando Gonzalez Luna. The GLAS (Gonzalez Luna Associates) consortium raised a claimed $20 million from sponsors before the man himself vanished without trace, along with the money, in the summer of 1990. Faced with a choice between throwing good money after bad or junking the entire project, Lamborghini chose the former, but strictly limited the amount of cash it injected into the car and the team that would run it, somehow persuading Italian financier and industrialist Carlo Petrucco to get involved.

Thus, an entity named Modena Team arrived at the opening Grand Prix of the 1991 season with a pair of metallic blue cars badged as Lamborghini 291s. In spite of having to complete pre-qualifying—there were so many entries in those days that the minnows were pruned viciously in a knock-out session on the Friday morning of each grand prix weekend—the cars showed potential. Nicola Larini finished seventh at Phoenix, and Eric van de Poele was in the points and had the checkered flag almost in sight at Imola when his fuel pump broke.

But in Formula 1, if you don't invest in going forward you end up going backward, hence the truism that the fastest way to make a small fortune in motor racing is to start off with a large one. With no more money forthcoming—Lamborghini's official history blames Chrysler, but that's being a trifle economical with the *actualité*—Modena Team barely registered its presence again and shuttered its doors at the end of the season.

From 1992 the Lamborghini name was joined by Chrysler branding on customer engine covers, although the continuing underperformance of those customers led the US giant to wonder if it was all worthwhile. An opportunity to test that theory would soon arrive.

In 1993 McLaren was in trouble, soldiering on after Honda's withdrawal from F1 with customer Ford engines. This did not sit well with Senna, the team's star driver, who nonetheless pulled out a string of epic against-the-odds race wins while still refusing to consider anything more than a race-by-race contract. Senna wanted more power. Team boss Ron Dennis was desperate to retain his champion. Opportunity, in the form of Chrysler, knocked.

That summer a small team at McLaren's base in Woking, England, worked solidly for three months to adapt a chassis designed to accommodate a Ford V-8 so that it would accept Lamborghini's raging V-12 leviathan. This was no cut-and-shut job; the transmission, drive-by-wire throttle, and all the other control electronics were painstakingly adapted so that when the car ran, it would be representative.

And when it did, in a secret test at Estoril in Portugal, Senna was so enthused that he immediately phoned Dennis: more power in the midrange, a little less manic at the top, and McLaren could race it straight away. Forghieri duly removed 25 brake horsepower from the top of the rev range but created a peak of 60 brake horsepower more than before in the rump.

Dennis shook hands on a deal with Chrysler's Bob Lutz and Lamborghini Engineering's Daniele Audetto at the Frankfurt Motor Show that September. Weeks later, Senna tested the Lambo-engined McLaren again at Silverstone, pronounced himself satisfied with the changes, again entreated Dennis to race it before the end of the season, then handed over driving duties to Mika Hakkinen. Fittingly for what was about to happen next, after a handful of laps the engine suffered a devastating blow-up.

The McLaren-Chrysler partnership never reached the contract stage. Dennis chose Peugeot instead, Senna left McLaren for the dominant Williams team, Chrysler sold Lamborghini, and the adventure was over.

Diablo VT	
Chassis	Steel spaceframe with composite panels
Suspension	Independent double wishbones front/rear, coil springs and telescopic shock absorbers, anti-roll bars
Brakes	Ventilated Brembo discs
Wheelbase	2650 mm
Front/rear track	1540 mm/1640 mm
Wheels/Tires	17 in × 8.5 in, Pirelli PZero 245/40 (front); 17 in × 13 in, Pirelli PZero 335/35 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	87 mm/80 mm
Cubic capacity	5707 cc
Compression ratio	10:1
Maximum power	492 bhp at 6800 rpm (claimed)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder
Fuel/ignition system	Dual Bendix pumps, Lamborghini electronic fuel injection
Lubrication	Wet sump
Gearbox	Lamborghini 5-speed manual
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1625 kg
Top speed	202 mph (claimed)

MURCIÉLAGO

DURING THE COURSE OF SATURDAY, SEPTEMBER 8, 2001, some 200 Lamborghinis came home to the factory at Sant'Agata Bolognese, steered with almost breathless excitement down the Autostrada by their eager owners, each one anxious to see what the first Lamborghini developed under Audi's ownership would look like. There had been spy photos, of course. But this would be it: the Murciélago in the metal.

AUDI FLEXES ITS MUSCLE

A remarkable 4,099 Murciélagos were built during its nine-year production run—double the number the Countach achieved between 1974 and 1990. ***Automobili Lamborghini***

The last of the daylight had faded when the guests—owners, wealthy enthusiasts, VIPs—were directed to a corner of the factory where a temporary stage had been erected. The lights came down. The opening bars of Steppenwolf's *Born to Be Wild* pounded through the speakers, soon joined by the familiar roar of the Lambo V-12 as an example of the new car was revealed—resplendent in eye-popping Verde Ithica paintwork. Grown men would later claim to have shed real tears upon seeing it for the first time. Beatlemania had nothing on this.

The night before, the Murciélago had been unveiled to selected media in what lives in the memory of those scribes privileged to be present as one of the most flamboyant press junkets of all time: at night, on the slopes of Mount Etna, with pyrotechnics, fake lava flows, specially commissioned films, and live dancers.

"The volcano was smoking gently as we flew in," the editor of *Car* magazine, Angus Mackenzie, would later write. "And as we drove up the mountain some of the lava from an eruption mere weeks earlier was still cooling. It wasn't hard to figure out the subtext here: This car is meant to be intimidating. Handle with care."

Since the due diligence process had made it clear that Lamborghini needed to sell 1,500 cars a year to remain a viable business, Audi had set an ambitious timeframe for new models. Replacing the Diablo would be the priority, with a greater-volume "baby Lambo" to follow within a minimum of two years after the Diablo's successor. Moving in to the factory in August 1998 to revealing the finished Murciélago to potential buyers took just over three years.

The easy option would have been to push on with whatever was already in development. But before, during, and after the transition from Chrysler to Megatech ownership, Lamborghini vacillated on product development, and the result was a clutch of proposals that were not pursued. In the early 1990s, Marcello Gandini was invited to design a replacement for the Jalpa, but his angular and rather '80s proposal was not much liked. Italdesign's Calà also came and went; McLaren F1 stylist Peter Stevens, doing contract work in Sant'Agata, described it as so: "Not one of their best pieces of work, it was a fat and not a particularly cohesive design." Then Zagato showed a supposedly production-ready concept based on the Diablo chassis and drivetrain (albeit without the ABS and traction control) and called the Raptor at Geneva in 1996, but it was not taken up, either. Instead, Zagato had been invited to produce a new design, and development of the putative new car—known as the Canto—was well underway when Lamborghini changed hands again in 1998. Spy photographs of a development "mule" undergoing testing at Nardo had already been published in several European car magazines.

VW Group boss Ferdinand Piëch scrutinized the Canto and, like a Roman emperor adjudicating an unsatisfactory gladiatorial bout, gave it the thumbs-down. Only the chassis, engine, and drivetrain would be retained. Work progressed quickly; Audi invited styling proposals from other leading Italian design houses, including Bertone and Giugiaro's Italdesign, and seconded its own Luc Donkerwolke to establish an in-house design office at Sant'Agata.

By the time the second-generation Murciélago came on stream in 2006, build quality was well up to Audi standards. ***Automobili Lamborghini***

Donkerwolke was seen as an unusual choice by many, since the majority of his work had been in the more humdrum field—he had only recently returned to Audi after a tenure at Skoda, the VW Group's Czech-based value brand, where he had helped style the company's first new ground-up designs under VW's ownership. But the gifted and ambitious Belgian was determined to make his mark on cars with a sticker price bearing considerably more decimal places. By the beginning of 2000, after considering all the proposals, Audi had signed off on the design by Donkerwolke's team.

The triumph of the Murciélago is that it established a fresh set of design cues for the 21st century while carrying enough familiar features to avoid frightening Lamborghini purists. Since its chassis was a development of the Diablo's, it's no surprise to see they shared a similar stance and proportions, though the newer car rebalanced the cabin and glasshouse away from the "cab forward" look that had been so modish in the late 1980s and early 1990s. The gaping shoulder vents that had offended the eyes of Piëch and his senior engineers as they contemplated the later Diablos and the Canto were gone, replaced by subtly aero-optimized scoops. This new car embraced Lamborghini's past rather than seeking to put them through the shredder along with the company files; why, even the front shutline of its scissor doors clearly echoed those of the Diablo.

It was fresh yet familiar, neat and modern but far from dull—a car that could, like all Lambo supercars past, command attention, as documented by John Phillips in *Car and Driver*:

> On I-94 in front of Detroit Metro Airport, I tried to pass a Melvindale Elementary school bus. As I drew even, I noticed the bus had started to lean at a frightening angle—was leaning in my direction, in fact, like a yellow Lusitania about to invert. I nailed the throttle to avoid being crushed. As I roared past, I could see the driver was half out of his seat, his body twisted to the left, his face contorted. He looked like Ralph Kramden yelling at Ed Norton. Here was his problem: Every child onboard had stampeded to the portside windows.
>
> That little dancing bull on the nose of a car—it drives people nuts.

The faithfulness to Lamborghini's past was reflected in the car's choice of name. Audi dropped the "Canto" tag and scoured the history books for a suitably named Miura bull, eventually alighting upon Murciélago, a particularly resilient bovine that came into Don Antonio Miura's hands when its life was spared after it withstood many stabbings in the ring during a fight in 1879 (as with so much associated with Lamborghini folklore, the exact number of stabbings is hotly debated). There was something appropriate, given Lamborghini's recent financial health, about naming the company's new big beast thus.

Murciélago	
Chassis	Tubular steel monocoque with composite inserts
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated Brembo discs with ABS and DRP
Wheelbase	2665 mm
Front/rear track	1635 mm/1695 mm
Wheels/Tires	18 in × 8.5 in, Pirelli PZero 245/35 (front); 18 in × 13 in, Pirelli PZero 335/30 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	87 mm/86.6 mm
Cubic capacity	6192 cc
Compression ratio	10.7:1
Maximum power	580 bhp at 7500 rpm
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Lamborghini electronic fuel injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed manual (e-gear robotized manual optional)
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1650 kg (Roadster 1665 kg)
Top speed	205 mph (Roadster 199 mph)

Manufacture of the steel tube frame was outsourced at first, with the composite body panels produced in-house along with the roof panel, which as a load-bearing element was made of steel. Engineering director Massimo Ceccarani oversaw an interesting departure in the engine bay, stretching the venerable V-12 to 6.2 liters and dry-sumping it, as Giotto Bizzarrini had originally intended. This enabled the unit to be installed 50 millimeters lower, with obvious handling benefits.

Lamborghini retained its own four-wheel-drive transmission rather than adopting Audi's famous Quattro system, and the new six-speed gearbox—a first for Lamborghini—was also developed in-house at Sant'Agata. As before, the rear differential was integral to the block, with a viscous coupling directing drive to the front wheels. Lamborghini also introduced a paddle-shift gearbox called the e-gear, which was not a semi-automatic but a robotized manual. This system continues to divide opinion among owners.

The brakes featured ABS for the first time, but even though this was the most thoroughly tested new Lambo ever, braking was repeatedly highlighted as a weak spot by professional testers and owners. Many of the latter had third-party upgrades fitted, especially those who drove the car as Balboni intended.

Simon George, a track day organizer who acquired a Murciélago for his company to run, detailed the expenses involved in running the car for several years in *Evo* magazine. In one entry he nails the brake issue:

> A couple of weeks ago I got a welcome call from Renato Cappucci, managing director of Tarox UK. Regular readers may recall that I needed some new brake discs, as the old ones were starting to crack. At a grand [English slang for £1000] a corner, I passed on Lamborghini's own discs, made by Brembo and unobtainable elsewhere. Instead I let Tarox have a couple of my worn ones, which were then sent to the company's factory in Italy to act as templates for a new set. Three weeks later and Tarox came up trumps with beautifully machined replacements that had been grooved instead of drilled to avoid the cracking issue.
>
> First impressions are very positive, with significantly more bite on offer. There's a bit of squealing while they're bedding in, but it's a small price to pay for reduced fade on track. At £1500 a set they make the £4000 being asked for the OE [original equipment] items look very expensive.

To balance performance with looks, the Murciélago featured a number of movable components that only deployed when needed, including a rear spoiler that self-erected to 50 degrees above 80 miles per hour, then to 70 degrees at 135 miles per hour. The air intakes on each shoulder also rose when the engine required more cooling—or, via a switch in the cockpit, when the driver wanted to show off.

LUC DONCKERWOLKE

The son of a Belgian diplomat, Luc Donckerwolke was born in Lima, Peru, in 1965, and spent his early years globetrotting around Africa and South America. The experience made him fluently multilingual.

He completed his education in Europe, studying industrial engineering and transportation design at institutions in Belgium and Switzerland, and got his break in the automotive industry at Peugeot in 1990. In 1992 he moved to Audi and thus began a lightning procession up the design ladder in the Volkswagen Group, which he has attributed to being an "outsider."

"I became the designer for special projects," he told one interviewer. "Most of my colleagues were linear designers who wanted to stay with single projects so they could go home at four. I never went home."

After two years at Audi he moved to Skoda, the Czech brand acquired by VW in the late 1980s and then undergoing a relaunch. By 1996 he was back at Audi, contributing to the radical all-aluminum A2 and the styling buck of what would become the R8R Le Mans race car.

His secondment to Lamborghini, acquired by Audi in 1998, afforded him a great opportunity. He facelifted the Diablo for its final SV incarnation and sold senior management on his vision for its successor, beating off proposals from the likes of Bertone, Italdesign, and IDEA. During this time Lamborghini established its own styling department, Centro Stile.

Donckerwolke worked with Italdesign on the Gallardo, and supervised the Murciélago Roadster, before being redeployed to the VW Group's Spanish brand SEAT as head of design. In 2012 he was promoted again to head up design at Bentley, another of VW's flagship acquisitions.

While Audi had removed some of the ergonomic quirks typically associated with Lamborghini—although the manifest difficulty of reversing such a substantial vehicle in tight spaces, with limited visibility, would remain—the carryover nature of the chassis from the Diablo made for some unavoidable inconveniences. As John Phillips noted in *Car and Driver*: "What you notice first about the Murciélago is that its left-front wheel intrudes some eight inches into prime footwell territory, skewing your feet to the right. Your left foot searches for a place to relax—under the clutch is about the only comfortable spot. What you notice next is the accelerator pedal juts out of a small black box, like a paddle raised in a canoe. Your heel rests on the front of this box, and you bend your toes forward to move the throttle. You can duplicate the sensation by walking around with a box of Tic Tacs in your shoe."

Prospective owners were not dissuaded. In 2000 Lamborghini sold 296 Diablos. Once the Murciélago came on stream, the figure rose to 424 units in 2002. But the company was still a long way from break-even territory—to reach that it would need the more affordable Gallardo. Still, it continued to refresh the Murciélago throughout its life, ensuring that annual sales of that model would only dip below the 400 mark once until 2009.

A roadster variant was the obvious way to broaden the Murciélago's appeal, and once the Gallardo was signed off, Donckerwolke got to work. Lamborghini showed a concept at the Detroit show in 2003, then unveiled the Murciélago Roadster for real at Geneva in March 2004, alongside a limited-edition version of the coupe model (distinguished by a one-off exterior color in blue, different wheels, leather trim, new exhaust, and a numbered plaque inside), of which 50 were built, to celebrate the company's 40th anniversary.

The eye-catching interior featured different material for the driver's side, in a perforated finish, to make it "extreme and exclusive," said Donckerwolke. You could even specify each side of the cabin in a different shade of leather, if you wished.

To regain the structural stiffness lost with the roof, the Roadster gained additional box-section steel tubes in strategic places, with additional composite elements in the A-pillars and the sills. For rollover protection, the windshield frame was beefed up, and a pair of pop-up roll bars from the Audi parts bin were installed behind the headrests. A steel engine brace ran over the V-12 from rear bulkhead to the suspension carriers, though for an extra $4,000 this could be had in carbon fiber. In a neat and purposeful nod to history, the engine cover itself hinged from the rear, as its equivalent did on the Miura.

The Roadster was supplied with a very basic canvas lid that was not so much a roof as a *bonnet de douche*—and one not warranted to be used at speeds over 100 miles per hour at that. Douglas Kott described the driving experience in *Road & Track*:

> Top removed, the throbbing, slightly reedy backfill of the V-12's exhaust tingles your very core for the complete THX-Dolby theater experience . . . in a theater whose viscous-coupling all-wheel drive channels the engine's 572bhp for a 0-60 blast of about 3.8 seconds. With the wind tugging at your hair and tearing at your face, it seems quicker still.
>
> You *could* use the top, but it's really designed to protect the leather-clad interior from the freak cloudburst. It's a fussy contraption, with a collapsible small-gauge steel tube frame, that needs to be unfolded, extended, fitted, and snapped into place. Separate longitudinals that incorporate the side windows' upper seals complete the top, which stows in a fitted leather bag in the front-mounted trunk when not in use. Top up, a sign on the windshield header reminds you not to drive the car over 100 mph (I picture an F-16 jettisoning its canopy as the pilot punches out—and fasten my seatbelt!).

The arrival of the Gallardo in 2003, and the horsepower arms race that subsequently kicked off with Ferrari, impinged somewhat on the Murciélago's territory. The original Gallardo's V-10 made a claimed 500 PS (493 brake horsepower), not too far off the Murciélago V-12's claimed 580 PS (572 brake horsepower), and in power-to-weight terms the performance gap was narrower still. When Ferrari deployed the F430, prompting Lamborghini to spruce up the Gallardo's performance for its 2005 refresh, the "baby Lambo" crossed the Rubicon: 520 PS (513 brake horsepower). And a second-generation model that would be more powerful still was in the works.

To that end, for 2006 the Murciélago also gained a performance boost in a midlife rebirth aimed at putting clear water between it and its junior sibling. While the exterior changes amounted to little more than a mild sharpening of the lines around the nose and tail, there were plenty of changes under the skin. The occupant of the engine bay was stretched to 6.5 liters and given a new variable valve-timing system, bringing power to a claimed 640 PS (631 brake horsepower)—hence the new LP640 badging—though it exhaled through a new exhaust system that left some observers nonplussed.

"It muffles the V12's voice to the point that you wonder if you've gone partially deaf," wrote *Evo* magazine's John Barker. "Proof that you haven't is there in the shape of the multiple warning bongs and chimes that almost drown out the aurally castrated V12—door open, key in ignition, seatbelt undone, shirt not buttoned-up properly. . . ."

In reprogramming the paddle-shift gearbox and upgrading the clutch, Lamborghini also implemented a so-called safety measure that prevented the driver from engaging a gear while one of the doors was open. This made it impossible to reverse "Balboni-style," an out-of-the-seat parking technique perfected by test driver Valentino Balboni and imitated badly by many owners. On the move, though, the new Murciélago LP640 confounded expectations that it had gone all politically correct.

"It's a relief to find that from the driver's seat the Murciélago's character and appeal remain intact," noted Barker. "Inside, the sound of the engine's exertions is largely undiminished, and the big V12 remains a mighty, energetic, and stimulating force at your back, climbing to its red line with an epic, ever-changing soundscape that finally hardens and resolves for the stomach-flipping lunge to the limiter. The Gallardo's V10 is a fine engine, but an extra pair of cylinders makes a big difference."

Lamborghini only partially addressed the first-gen Murciélago's poor braking performance, adding carbon-ceramic anchors to the options list (alongside, among other things, a glass engine cover) at a rather steep $12,500. For the keen driver another headline change to the spec, a new Kenwood stereo system, seemed superfluous, though the new bucket seats were an improvement. It was disappointing, too, to see other ergonomic quirks, such as the slightly offset instrument binnacle, go unimproved.

There was also a growing feeling that the Murciélago's steel-frame underpinnings were antediluvian in comparison with lighter, more nimble rivals that were appearing with composite monocoques. "The Murciélago undisputedly still remains relevant, or as relevant as a 212mph 1.7-tonne two-seat lorry can be," wrote Chris Chilton in *Car* magazine after testing a new LP640.

The car's old-school structure did open up the potential for it to be adapted to run in GT racing, though, with the possibility of establishing a profitable sideline in supplying these variants to customers. German tuner Reiter Engineering developed a rear-wheel-drive-only version of the Murciélago designated the R-GT, but GT racing in the 2000s was a fickle environment of proliferating series, and beset by arguments over how the performance of very different cars could be balanced. Only a handful of R-GTs were built, although one won the opening race of the 2007 FIA GT Championship.

Murciélago LP640

Chassis	Tubular steel monocoque with composite inserts
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated Brembo discs with ABS and DRP (carbon-ceramic optional)
Wheelbase	2665 mm
Front/rear track	1635 mm/1695 mm
Wheels/Tires	18 in × 8.5 in, Pirelli PZero 245/35 (front); 18 in × 13 in, Pirelli PZero 335/30 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	88 mm/89 mm
Cubic capacity	6496 cc
Compression ratio	11.0:1
Maximum power	631 bhp at 8000 rpm
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Lamborghini electronic fuel injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed manual (e-gear robotized manual optional)
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1650 kg (Roadster 1665 kg)
Top speed	211 mph (Roadster 205 mph)

Lamborghini continued to refresh the Murciélago, following up the anniversary edition in 2006 with a run of 20 coupes and roadsters custom-trimmed in collaboration with the Versace fashion house. Each car arrived with matching Versace luggage and driving accessories.

In 2009, with the end of the line in sight and development of the Aventador underway, the most extreme variant yet of the Murciélago made its debut. The LP670-4 SuperVeloce's name was an implicit nod to a badging history that stretched back to the Miura, and there was no mistaking it for an "ordinary" Murciélago if you selected the optional "Aeropack," which featured a prominent racing-style spoiler at the rear, at a cost of losing three miles per hour from the top speed (somewhat academic, since the quoted top speed sans wing was 212 miles per hour).

"Despite sacrificing top speed," wrote *Car and Driver*'s Gregory Anderson, "serious drivers will opt for the Aeropack because the big fixed wing creates so much downforce that Lamborghini should consider changing the name to SG, for Super Glue. On the 16-turn, 3.9-mile handling track at the Nardò proving ground in southern Italy, the SV's rear end always remained firmly planted, in contrast to the base Murciélago's occasional booty shake around tight corners."

Although engine power rose to 670 PS (661 brake horsepower), the SV's trump card came in the form of a claimed 220-pound weight loss program, attributed to a more thorough use of carbon fiber and lightweight steel in the chassis, a lighter exhaust system, a fixed rear spoiler (thus eliminating the weight of the motors for the moveable one), and infuriatingly unyielding carbon-shelled seats. *Road & Track* achieved 0–60 miles per hour in 2.8 seconds during performance testing on the runway of a former airbase. That's a full second faster than the first-generation model.

To complement the lighter weight, Lamborghini tuned the steering to make it feel sharper. Ferrari had just launched the HGTE handling pack of its 599 model, to which the LP670-4 SV came as a brutal riposte. Wrote David Vivian in *Evo*:

> It isn't just the accelerative lunge for the horizon that momentarily makes me forget to breathe, but the way it builds to a shattering crescendo gear after gear. In summary, this thing goes like hell.

> And corners do little to blunt its charge. What's perhaps most remarkable about the SV's chassis is its eagerness to translate even the most fleeting and subtle helm input into meaningful action. You can nuance a cornering line with steering or throttle. And with so much width to place on the road, it's a revelation that it can be done so accurately. This is the other side to the SV's character—it feels focused and intimate. The colossal output from the engine is met without contrivance or nerves from the chassis. Just grip, conviction and precision.
>
> Power oversteer? With the torque split rear-biased it isn't off the agenda, especially if you stay on the brakes while turning in, but you'd better be quick with the opposite lock. Let it get too out of shape and there's no way back.

As sales of the Murciélago began to tail off—a combination of the global recession and wealthy prospects keeping their wallets in their pockets in anticipation of the car's replacement—Lamborghini sought to feed interest with a final pair of limited-edition models. The LP 670-4 SuperVeloce China Limited Edition of 2010 drew attention largely because of its supersized moniker; 10 were built, aimed, as the name rendered explicit, for the Chinese market, and were no different from the standard SV save for the color, which was gloss gray with a central black-and-orange stripe. Lamborghini claimed the stripe was chosen to "symbolize the strength of an erupting volcano"—unfortunate, given that many of the foreign delegates at the Beijing show, where the car was unveiled, were unable to fly home because of the ash cloud from the eruption of Eyjafjallajökull in Iceland.

Less niche was the LP650-4 Roadster, a 20-model run of the roofless Murciélago with two-tone paintwork, in Grigio Telesto with Arancia detailing, and a two-tone interior with different shades of black leather and alcantara for the driver and passenger side. To differentiate it from the work of custom painters, Lamborghini liberated a little more power from the engine to give 650 PS (641 brake horsepower), thus rendering it suitably exclusive.

The LP670-4 SV was certainly among the most viscerally exciting cars ever to take to the road, but, launched into a market that had been chilled by recession, it would fail to sell in the numbers anticipated. Lambo claimed that 350 would be built before the production line was dismantled to make way for the Aventador. In reality, the number of SVs made and sold barely reached half that figure.

In spite of this muted coda, the Murciélago was an incredible success. Nine years after that intensely flamboyant launch, production of the car that relaunched Lamborghini and defined the brand's destination in the 21st century came to an end. On November 5, 2010, accompanied by a respectful ceremonial send-off featuring an escort from a police Gallardo, a 350GT, a Miura, a Countach, a Diablo, and a white LP670-4 SV, Murciélago number 4,099—an SV painted in Arancio Atlas—rolled off the line. It had taken 11 years to sell 2,903 Diablos.

Murciélago LP670-4 SuperVeloce	
Chassis	Tubular steel monocoque with composite inserts
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated carbon-ceramic Brembo discs with ABS and DRP
Wheelbase	2665 mm
Front/rear track	1635 mm/1695 mm
Wheels/Tires	18 in × 8.5 in, Pirelli PZero 245/35 (front); 18 in × 13 in, Pirelli PZero 335/30 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	88 mm/89 mm
Cubic capacity	6496 cc
Compression ratio	11.0:1
Maximum power	661 bhp at 8000 rpm
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Lamborghini electronic fuel injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed e-gear robotized manual
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1565 kg
Top speed	213 mph

GALLARDO

THIS WAS A HIGH-STAKES GAME. When Audi collected the keys of the Sant'Agata factory in July 1998, its senior management knew that all eyes would be on the successor to Lamborghini's marquee car, the Diablo. But not for long. Audi had done its sums diligently and come to the conclusion that Lamborghini needed to shift 1,500 cars a year minimum to stay afloat. It had not come anywhere near that, ever; hence, the procession of different owners, each departing amid the jetsam of thwarted ambition. It needed a more accessible and affordable model, a successor to the Jalpa, but preferably one that would actually sell.

THE DRIVER'S SUPERCAR

Getting the Murciélago off the ground to replace the aging Diablo was the priority, but within 18 months of the buyout Audi started to factor the so-called "baby Diablo" into its thinking. To lighten the load on chief designer Luc Donkerwolke's embryonic Lamborghini Centro Stile, in early 2000 Audi invited styling proposals from its own in-house design team as well as Italian coachbuilders Italdesign, Bertone, and IDEA. Italdesign already had something ready to go, designed several years earlier by Fabrizio Giugiaro, son of Giorgetto.

At the Geneva show in 1995, Italdesign had demonstrated a 2+2 "research prototype" called the Calà, openly acknowledging the influence of the Lamborghini Miura and Countach on some of its design elements. Beneath the composite skin was an aluminum chassis. Show-goers were accustomed to Italian design houses indulging in blue-sky whimsy, so many were inclined to mosey on past without asking too many questions. A few, unkindly, were moved by the rather unbalanced look of the air scoops on its shoulders to comment that Fabrizio Giugiaro had some way to go before emulating his father. Mechanically, though, the Calà was worth a second look: not only was the drivetrain Lamborghini-based, with a Sant'Agata four-liter 372-brake-horsepower V-10 engine (built in the Chrysler era) driving the rear wheels, but the car itself was perfectly drivable. No simple styling mule, this.

The Calà would never see production in its original form, but Italdesign revisited the idea when invited to create a styling proposal for the car that would become the Gallardo; and what had been left to wither on the vine for lack of investment by Megatech in 1995 would, just a few years later, become the foundation of Audi's grand plan to make Lamborghini a financially viable concern.

Only the Audi and Italdesign proposals went through to the final phase, with the updated Calà getting the nod. So too did the aluminum spaceframe concept, although as development progressed the senior engineering team suddenly applied the brakes: the car needed to be more compact. This would involve a major re-skin of the body, overseen by Donckerwolke. He tightened the design, harmonizing some elements with the forthcoming Murciélago, changing the round taillamps for wrap-over ones, reshaping the headlights and air intakes, and specifying a movable rear spoiler that only manifested itself at speed. The finished car was reckoned to be 70 percent Donckerwolke, 30 percent Italdesign.

Since the Gallardo would be going in to bat against established opposition, chiefly the V-8-engined Ferrari 360 Modena and the flat-six Porsche 911, getting the powertrain and driving experience right was arguably more important than nailing the look. There could be no excuses for wayward handling, slack quality control, offset driver contact points, or switchgear sited as if fired at the styling buck with a blunderbuss.

The extant four-liter V-10 engine was too small and packed insufficient wallop to pass muster in the 21st century; but the engineering team thought a V-8 would be rather "me too," certainly not enough to up the ante against Ferrari. So a five-liter V-10 it would be, albeit one based on the architecture of an existing Audi V-8 (see

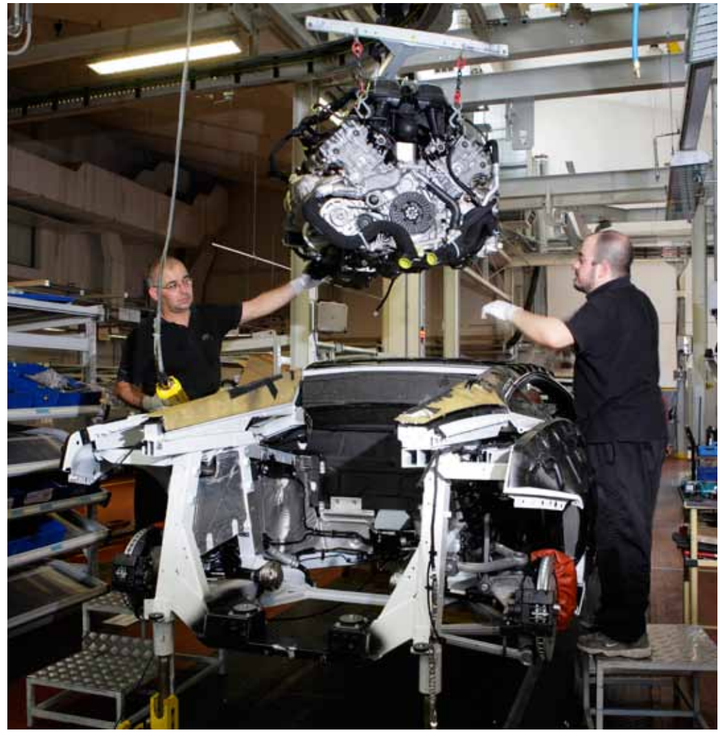
Although the Gallardo was produced on a highly automated line, in greater numbers than any previous Lamborghini, much of the detail work was done by hand. *Automobili Lamborghini*

"V-10 power"). Once news of this leaked out, it set the grapevine humming: Was this the thin end of the dumbing-down wedge for Lamborghini?

Cassandras need not have applied. "You're going to love it," wrote *Autocar*'s venerable European editor, Peter Robinson, after a trip to Sant'Agata in May 2003. "The Gallardo's deep roar couldn't be more different from the high-frequency shriek of the flat-crank V8 in Ferrari's 360 Modena, or the natural bellow of the Murciélago's V12. Nor is it at all like the subdued mechanical noise of the Audi V8 from which the V10 is circuitously derived."

Packaging dictated the engine's racing-style *V* angle. "We looked at a 72-degree V10," said chief engineer Massimo Ceccarani. "But the centre of gravity would have been higher and the packaging compromised. Obviously we made some synergies [with the Audi V-8] but it all started out from the concept of a 90-degree V10."

Take that, Porsche and Ferrari; at launch the Gallardo's V-10 delivered a peak output of 493 brake horsepower, compared with the 911's 414 brake horsepower and the 360 Modena's 394 brake horsepower. As word got around, the dyno jockeys of Maranello and Stuttgart began to sharpen their pencils.



Manufacture of the Gallardo's mighty V-10 was outsourced to other companies in the Audi group, with final assembly happening in Hungary before the complete units were shipped to Sant'Agata. *Automobili Lamborghini*

Since the factory was still under development—a museum and admin block was added in 2001, and the Gallardo production line was installed over the winter of 2002–2003—many elements of the Gallardo were outsourced. The aluminum spaceframes were fabricated in Germany by Krupp-Drauz and then painted at an Audi facility, the former NSU plant at Neckarsulm, before being shipped overland to Sant'Agata for assembly on the new line.

The Gallardo's suspension wishbones were also aluminum, and it was the first production car within the Audi group to use Koni's Frequency Selective damping system, a passive technology that progressively adjusted the damper settings according to the road conditions. Below a certain degree of jiggle they were set to their hardest, then once vertical movement exceeded 7 hz an internal valve would open to soften the damping and rebound.

The year 2003 would be crunch time for Lamborghini. The Gallardo assembly line was completed in February, the car unveiled at Geneva in March, and then dealers and media were selectively introduced to it in April through June. Lamborghini's dealer network bit in a big way; its US network alone ordered 35 percent of the Gallardos to be built that year, projected to be 890 units. Soon the factory was working double shifts to ensure that demand was met.

Gallardos queue up on the production line; with 14,022 built, it was by far the most successful Lamborghini model in the company's history. *Automobili Lamborghini*

Next up, the media. The drip-feed began with a group of five journalists driving a stealth-black pre-production Gallardo around Italy's Imola circuit in late May. *Autocar*'s Robinson was among them:

> Although it feels rather more spacious than—dare I say—the bigger Murciélago, and Audi's influence is apparent in the superior ergonomics and use of the same climate and sound system that you'll find in an A4, the cockpit's genes are strictly Lamborghini.
>
> The base of the windscreen is so far forward that it's in front of the end of my feet. From here, slumped down low, it's hard to believe there's any bonnet at all. The pillars, rising out of the top of the front wheel arches, are thick and fast of angle—to the obvious detriment of visibility. The view over the shoulder, hindered by the buttresses from the roof almost to the very end of the car, remains true to Sant'Agata's who-cares-what's-behind-you attitude. So flat and cab-forward is the windscreen that the exterior mirrors are mounted on front-facing arms that emerge from the doors.

Undoubtedly a Lamborghini, then, but with most of the ergonomic rough edges smoothed off. As for those that remained—well, a wedgy, low-slung supercar was never going to afford its occupants the same commanding view as a minivan, was it? The only disappointment one might have voiced was the absence of scissor doors, but this, it's believed, was a deliberate choice by Lamborghini to establish boundaries between the Gallardo and the more exclusive Murciélago.

Regardless of its performance compared with its rivals, the Gallardo had incredible spectator appeal. As Aaron Robinson noted in *Car and Driver*:

> Who really cares what side of the Alps the pieces come from as you strafe the freeways in a Lamborghini Gallardo? Certainly not the other commuters, their noses pancaked to the glass and their ears twitching with each 493 bhp whoop from the V-10 wailing at your shoulder blades.
>
> Even the starter motor on the Gallardo sounds fast. Turn the key, and the frenetic chugging ends in a sultry whoosh of combustion as the 303-cubic-inch DOHC 40-valve V-10 ignites. The engine settles quickly on a breathless 1000-rpm idle, ready for anything from a lazy trawl down a boulevard to a blast up to the 8100-rpm redline, the wide torque band pushing hard from rest and the intake tract sucking obscenely from the fender ducts.

Glitches with the e-gear robotized manual gearbox, a development of a Magnetti Marelli system also used by Ferrari, Maserati, and Aston Martin, frustrated early attempts to run back-to-back performance tests between the Gallardo and its closest rivals. It, and associated excessive clutch wear, would continue to be a bugbear with owners, especially those who made frequent use of "thrust mode"—an automatic flying start system that optimized getaways from a standing start with a controlled amount of wheelspin. But the alternative transmission—a six-speed manual gearbox with overly long and springy clutch action and a slow, clunky throw—was equally disagreeable.

Nevertheless, in late October 2004 Ferrari launched its 360 Modena replacement, the F430, 18 months earlier than expected—a clear sign that the Gallardo was considered a serious contender. The F430 occupied the same price bracket, was 70 kilograms lighter (thanks to the absence of four-wheel drive), and only a shade less powerful at 483 brake horsepower. Ferrari, as usual, organized its press car schedule to thwart direct comparisons, but by subterfuge *Autocar* pulled off the trick. The ensuing test proved a very close call, with fine margins.

"The Gallardo's steering is weighty and accurate," wrote Ben Oliver, "but its responses feel programmed rather than natural and the rim lifeless after the light but fizzy Ferrari rack. The slight torque response that corrupts the four-wheel-drive Gallardo's steering in tighter bends is absent in the Ferrari, as is the mild understeer . . . and when the engines are working at the top of the range the Ferrari's slight power-to-weight advantage seems to count double; the throttle response more urgent, the kick in the backside even harder. Am I really about to write that a near-500bhp Lamborghini feels slow? After the deft, light, frenetic Ferrari, it does; it's slower and slightly wooden."

Gallardo Spyder

Lamborghini's riposte came within months in the form of a 250-model limited-edition SE, each individually numbered, with a two-tone color scheme (including a choice of six different main shades) and new wheel rims, along with trim changes and more standard equipment, such as a rear-facing camera to facilitate parking. It also had a different steering rack, promised to sharpen the steering response, and shorter ratios in the first five gears. The technical changes, plus revised engine mapping (giving 513 brake horsepower) and a rortier exhaust, were rolled out to the rest of the range for the 2006 model year. The tweaked car also featured a lifting mechanism at the front to temporarily increase ground clearance by four inches when negotiating urban obstacles such as speed bumps; it worked by feeding extra oil, driven by the power steering pump, into the front shock absorbers.

Lamborghini wasn't done improving the first-generation Gallardo, launching a Spyder open-top variant at the 2006 Los Angeles show and then putting the coupe on a crash diet for a special model to be unveiled at Geneva in March 2007. The Superleggera's name was a play on the lightweight construction method patented in the 1930s by the long-defunct Carrozzeria Touring, Lamborghini's coachbuilder of choice in the marque's early years.

Gallardo

Chassis	Aluminum spaceframe
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated Brembo discs with ABS, ASR, and ABD
Wheelbase	2560 mm
Front/rear track	1592 mm/1622 mm
Wheels/Tires	19 in × 8.5 in, Pirelli PZero 235/35 (front); 19 in × 11 in, Pirelli PZero 295/30 (rear)
Engine	Rear longitudinal-mounted 90-degree V-10
Bore/Stroke	82.5 mm/92.8 mm
Cubic capacity	4961 cc
Compression ratio	11.0:1
Maximum power	493 bhp at 7800 rpm (513 bhp from 2006 model year)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Lamborghini electronic fuel injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed manual (e-gear robotized manual optional)
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1430 kg (Spyder 1570 kg)
Top speed	196 mph (Spyder 195 mph)

To achieve a 100-kilogram weight reduction (70 kilograms in cars for the US market), Lamborghini swapped out many metal components for carbon fiber and polycarbonate. The engine hood, the rear diffuser, door panels, and mirrors, along with various pieces of interior trim—including the seats—all received this treatment. The glasshouse—with the exception of the windscreen—was replaced with transparent polycarbonate. Detail changes to the intake and exhaust manifolds to aid volumetric efficiency, plus a reprogrammed ECU, brought power to a claimed 523 brake horsepower; it could complete the 0–62 miles per hour benchmark acceleration test in 3.8 seconds, two-tenths of a second faster than the standard model. A sportier suspension package, previously optional on Gallardos, was now standard, as was the e-gear transmission. You could have a Gallardo Superleggera in four colors: Telesto Gray, Noctis Black, Borealis Orange, and Midas Yellow.

A disorderly queue formed to drive it. *Autocar* test driver Steve Sutcliffe, a racer of note in the ultra-hairy TVR Tuscan Challenge, wrote:

> The noise is what hits you first, because the Superleggera's new exhaust system has liberated a good few extra decibels from the V10, especially at the top end. But the real step forward is the handling; it is now close to racing-car sharp, and although the steering is meatier than before, the way the Superleggera hangs on through quick corners, and changes direction so rapidly through slower bends, is enough to make the back of your neck go all tingly. The brakes, too, are monumental once the (optional) carbon ceramic discs have come up to temperature.
>
> The only downside is what the Superleggera does on or near the limit of its admittedly huge reserves of grip. Thanks to standard-fit Pirelli P-Zero Corsa tyres, adhesion in the dry is enough to make your eyes water, and even when you press on hard the underlying trait is understeer. But if you do end up having to deal with an oversteer slide, you need to be lightning-quick with your inputs to avoid a spin. Gone, in other words, is the creamy, benign on-limit balance of the regular car. And that's the price you pay, inevitably, for having so much grip up to the point of no return.

The mainstream Gallardo model urgently needed to get back in the game though, so at the Geneva show in 2008 Lamborghini unveiled the second-generation model, boasting a Reventón-esque facelift around the mouth and, more importantly, an all-new 5.2-liter direct injection V-10 engine just aft of the driver and a lower dry weight. Badged LP560-4 in line with Lambo's new style of model nomenclature, highlighting (metric) power output and the number of driven wheels along with the location and alignment of the engine, the new Gallardo was a clear improvement on the outgoing model.

Gallardo LP560-4

Chassis	Aluminum spaceframe
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated Brembo discs with ABS, ASR, and ABD
Wheelbase	2560 mm
Front/rear track	1597 mm/1632 mm
Wheels/Tires	19 in × 8.5 in, Pirelli PZero 235/35 (front); 19 in × 11 in, Pirelli PZero 295/30 (rear)
Engine	Rear longitudinal-mounted 90-degree V-10
Bore/Stroke	84.5 mm/92.8 mm
Cubic capacity	5204 cc
Compression ratio	11.0:1
Maximum power	552 bhp at 8000 rpm (LP570-4 562 bhp)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Bosch electronically controlled direct injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed manual (e-gear robotized manual optional)
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1500 kg (Spyder 1570 kg)
Top speed	202 mph (Spyder 201 mph)

Gallardo LP560-4

Although the exterior changes were mild, they were claimed to improve aerodynamic efficiency and meet pedestrian impact regulations that had yet to come into force. Front and rear LED daytime running lights were in line with Audi's flagship models, giving the car an additional note of purpose as it grew larger in the rearview mirrors of the driver in front. The whole back end was also mildly restyled with a more integrated look, including a new diffuser claimed to improve high-speed stability. The passenger compartment was also given a lift, with a new instrument binnacle and dual-zone air conditioning, and it was extensively customizable under Lamborghini's new Ad Personam program.

There was also the promise of an improved, lighter, faster-shifting e-gear system, now offering five driver-selectable shift modes that also unlocked different power delivery characteristics via the engine ECU. In the track-focused Corsa mode, the shift time had been reduced by 40 percent, but this, as owners would find out, came at a cost of a particularly abrupt transition.

A Spyder variant soon followed, and with good reason. "Lamborghini says that the Spyder version of its Gallardo outsells the Coupé variant almost two to one," wrote *Top Gear*'s Tom Ford with a barely concealed sneer. "Which underlines a fact that we all probably suspected: Lamborghini owners really like to show off. Subtlety not required, ability to attract Russian prostitutes with nothing more than a lazy drive-by, an absolute selling point."

Over successive years Lamborghini added further breadth to the range, adding a Superleggera version of the second-generation model, badged LP570-4 to highlight its modest power bump, followed by an open-top version called the Spyder Performante. It also added a two-wheel-drive variant to function as an entry-level model, the LP550-2, allegedly to honor the retirement of longtime chief test driver Valentino Balboni, whose preference was for the purity of rear-wheel drive. A limited-run (250 models) "Balboni" special edition followed, distinguished by a center stripe with a gold border; though not as rare as, say, the Reventón, this model has acquired cult status among Lamborghini aficionados.

Following the successful launch of the Aventador, the Gallardo was treated to a facelift for its final year of manufacture, 2013. In essence this amounted to a pair of diagonal bars across the air intakes front and rear, along with alloy wheels finished in black with silver highlights, as was fashionable at the time. Potential owners wanting a final touch that was a little unusual, without being vulgar, could avail themselves of an optional styling package in which various pieces of exterior bodywork finished in matte black as standard were repainted in high gloss.

In November 2013 Lamborghini management and factory staff attended a small ceremony to mark a significant moment: the last Gallardo off the production line, an LP570-4 Spyder Performante, the 14,022nd Gallardo to be built. Cars such as the Miura created the Lamborghini legend, but the Gallardo—by a substantial margin the marque's most successful car ever—gave that legend longevity. Gallardos account for almost half of the Lamborghinis ever built.

V-10 POWER

Lamborghini already had a V-10 engine developed in the mid-1990s, but when this was deemed unsuitable by Audi, an all-new unit had to be developed in double-quick time. To achieve this, Lamborghini based the architecture of the dry-sumped block on that of Audi's extant 4.2-liter V-8 and combined it with newly designed pistons and conrods, adding new four-valve cylinder heads created in consultation with Cosworth Technology.

Cosworth is a familiar name to motor racing fans. The VW Group acquired it from defense manufacturer Vickers in 1998 and sold the racing division to Ford, retaining its casting and engineering facilities. The first Lamborghini V-10s started life in Cosworth Technology's foundry in Worcester, UK, before being shipped to another Audi facility in Hungary for fit-out, then sent on to Sant'Agata as mostly finished units.

Although this engine earned plaudits from critics and owners, it had a remarkably short shelf life for a modern powertrain. Not that it was a conspicuous weak spot of the car—early criticisms focused on build quality problems and the refinement of the gear shift, along with unusually high clutch wear. The problem was that Ferrari didn't welcome this invasion of its turf and fired back by improving its own models. For the 2006 model year Lamborghini revised the exhaust system, consolidating what had previously been two separate mufflers into one and engineering a pair of bypass valves that kept noise low while trickling around urban areas but added volume when the driver put pedal to metal.

A glance at the specifications of the 5.2-liter V-10 powering the second-generation Gallardo model, launched in 2008, might lead you to conclude that it's the original but with two-millimeter wider bores. In fact, the block was a new design, with wider bore centers and a longer crankshaft that was also stiffer and stronger to counter vibration problems experienced with the original engine.

"The old engine was at the limit of its power and capacity," technical director Maurizio Reggiani explained at the revised Gallardo's unveiling at the Geneva show in 2008.

Where the first V-10 maintained an even firing interval of 72 degrees, using split crankpins between opposing cylinders, in the new engine Lamborghini used common pins to give firing intervals of 90 degrees and 58 degrees. This, together with a new exhaust system, completely transformed the soundtrack, especially under hard acceleration.

Adopting Audi's Fuel Stratified Injection system (it sounds better in Italian: Iniezione Diretta Stratificata) gave better combustion characteristics, including reduced sensitivity to knock, which allowed a greater compression ratio of 12.5:1. This helped boost power as well as reducing CO_2 emissions by 18 percent. The latter improvement was perhaps located some way south of power, noise, and feel on the priority list of most owners.

"Fire up the Lambo and you might think it's powered by a whole other V10," wrote *Evo* magazine's John Barker in a back-to-back comparison test with Audi's R8 when that car became available with the Lambo V10, albeit in 34 brake horsepower milder tune. "It catches with a thunderous outburst loaded with a fluty, off-beat yowl, and if there are valves in its exhaust system they appear to be jammed open. It's hungry, edgy sounding at all times, and it behaves how it sounds. The R8 has superb throttle response but the Gallardo snaps forward like it's been given an electric shock, and the force that drives you into your seat is stronger too."

RACING THE GALLARDO

Automobili Lamborghini

Lamborghinis have been prepared for and entered in various GT race series over the years, but the factory itself always adhered to Ferruccio Lamborghini's tenet that racing was a mug's game unless you were winning. But, as Enzo Ferrari had proved, selling race cars could be a profitable business. So as Lamborghini expanded its reach under Audi's leadership, hungry for sales, racing came on the agenda once again.

German tuner Reiter Engineering had prepared racing Murciélagos for private clients including the Japanese Lamborghini Owners Club, and some two-wheel-drive Gallardos for the Japanese SuperGT series. Through 2008 the company was called upon to develop a new version of the Gallardo for a one-make race series along the lines of the long defunct Lamborghini Super Trophy. The championship, called the Lamborghini Blancpain Super Trofeo, would run on the support card of major international series including FIA GT, Formula 3, and the DTM, and pair wealthy amateur drivers with seasoned professionals in a multi-race pro-am format at a cost of €200,000.

Owing to the effects of the global recession, initial uptake was slow and the first event—due to support the FIA GT series at Silverstone in May 2009—was canceled. But the organizers pulled enough entries together for the series to kick off at Adria Raceway a few weeks later with a 15-car grid (30 had been built).

Reiter stripped 110 kilograms from the car and beefed up the suspension to cope with the rigors of racing. To make it friendlier for the less experienced gentlemen racers, they retained the all-wheel drive, but with a lightweight exhaust system and revisions to the engine management that liberated some more horsepower, bringing the total to 570 PS (562 brake horsepower).

Other racing addenda included a carbon fiber bodykit, and the glasshouse was replaced with polycarbonate. For reasons that must have seemed eminently plausible at the time, the brakes were steel—and, though the car had been through a number of preseason tests, actual racing exposed this as a weak point. A weekend featuring three 40-minute races was enough to toast the brakes in most cars.

Subsequent revisions ameliorated the brake problems, and in spite of a few other teething troubles the series found its legs and expanded into the US and Asia. In 2011 Lamborghini took race car manufacture and organization in-house under a new department, Squadra Corsa. Gallardos also continued to race in GT3 specification in GT series worldwide.

Gallardo LP550-2

Chassis	Aluminum spaceframe
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated Brembo discs with ABS, ASR, and ABD
Wheelbase	2560 mm
Front/rear track	1597 mm/1632 mm
Wheels/Tires	19 in × 8.5 in, Pirelli PZero 235/35 (front); 19 in × 11 in, Pirelli PZero 295/30 (rear)
Engine	Rear longitudinal-mounted 90-degree V-10
Bore/Stroke	84.5 mm/92.8 mm
Cubic capacity	5204 cc
Compression ratio	11.0:1
Maximum power	542 bhp at 8000 rpm
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Bosch electronically controlled direct injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed manual (e-gear robotized manual optional)
Transmission	Two-wheel drive
Clutch	Dry single-plate
Dry weight	1380 kg (Spyder 1520 kg)
Top speed	199 mph (Spyder 198 mph)

REVENTÓN

TEN YEARS AFTER AUDI BOUGHT LAMBORGHINI, and as the Murciélago reached middle age, the next phase of the corporate strategy came on stream: establishing a profitable sideline in manufacturing boutique exotica for the super wealthy. Was there any compelling need to develop a more extreme iteration of the Murciélago? Probably not—but, to paraphrase John F. Kennedy's famous speech announcing his intention to put a man on the moon, it was a goal that served to organize and measure the best of Lamborghini's energies and skills as it sought to establish its brand values in the 21st century.

EXCLUSIVE PERFORMANCE

Road & Track echoed these sentiments but couched them slightly differently: "Deciding not to wait until a coachbuilder picks up a Murciélago to convert it into something different, Lamborghini decided it could do the job better and started work on project code LP640/2, aka the M.O.A., which stands for 'Meanest of All.' Spokesman Dominik Hoberg said the designation was decided on because the car is expected to have 'at least' 650 bhp."

But although the Reventón was named after a Miura bull that killed bullfighter Félix Guzman in 1943, it was no more lethal than the Murciélago with which it shared underpinnings. While its engine was blueprinted to liberate an extra 10 brake horsepower, and much of the bodywork was composite, the Reventón was nowhere near as extreme as the Gallardo Superleggera, as chairman and CEO Stephan Winkelmann explained: "Our designers at the Lamborghini Centro Stile based in Sant'Agata took the technical base of the Murciélago LP640 and compressed and intensified its DNA, its genetic code."

Still stuck? Peruse the press materials, which were sprinkled with terms such as "haute couture." Or go straight to the VW Group horse's mouth; in its 2007 annual report it said, "The idea behind this strictly limited edition of 20 vehicles was to create a model that would crown the success of the brand, that will serve as a four-wheeled ambassador for the uniqueness of Lamborghini—and that will also demonstrate the short development times of which the sports car manufacturer is now capable."

In effect, Lamborghini took a car that few would describe as common—unless they lived in certain areas of London or Dubai—and made it super exclusive. Its exterior

Reventón Roadster

dressing was just that—a different and more rarefied set of clothes for a set of preferred customers Lamborghini defined as "friends and collectors." Only 20 would ever be built. The driving experience was largely unchanged, the handling no better, the acceleration broadly similar.

But what a set of clothes this was. The sharp creases and strakes, along with the proportions on the glasshouse, were reportedly inspired by the F-22 Raptor airplane—territory Lamborghini's designers would return to again and again over the coming years. To complete the Area 51 effect, each Reventón was finished in a shade Lamborghini waxed lyrical over: "Naturally, such a refined language of shape also demands an extraordinary color. For the 20 examples of the Reventón, the designers from Sant'Agata Bolognese have created a totally new hue: Reventón, a mid opaque green/grey without the usual shine."

A car hack looking for a cheap punchline would "uh-huh" at this hyperbole and describe the actual color as a matte gray. But seen in real life, up close, the stealth paintwork possesses a subtle shimmer thanks to the many thousands of tiny metallic particles in the mix. Lamborghini would do this again, to pleasing effect, with the Sesto Elemento.

The jet fighter cues ran from the sharp, pointy nose with its aggressive brake-cooling ducts (the six-pot calipers grasping carbon discs) through to the prominent rear diffuser and adjustable rear wing. The air intakes below the doors were asymmetrical, the one on the driver's side being larger in order to direct air to the radiator. With just one nod to style over function, the glass composite engine cover's open ventilation slots offered a view of the V-12 bellowing beneath—like that of the original Miura, only more coherently resolved with the rest of the car.

The composite panels were riveted and bonded to the chassis, as they were on the Murciélago, crowned with a billeted aluminum fuel cap and LED taillights. Inside, the driver had the option to switch the LCD fascia display between a traditional dial effect and something resembling a fighter jet's heads-up display—it even featured an airplane-style g-force meter that gave continuous indication of the intensity and direction of the forces acting on the car. Tellingly, the Reventón was only offered with the e-gear transmission, a clear pointer to future models dropping the manual shift option.

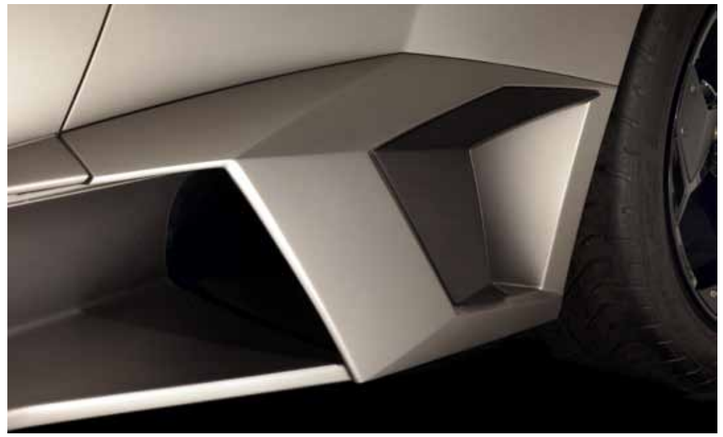
Since just 20 models were to be offered to customers, the Reventón rapidly acquired an almost mythic status. The Lamborghini Blancpain Super Trofeo race series (see page 138) might have been a mere support act for more prestigious international championships, but Lambo's lavish "hospitality village" for drivers and VIPs, artfully dressed as a sort of military enclosure (complete with camouflage canvas) proved to be a massive draw for spectators. Part of that allure can be put down to the curb appeal of the Reventón that formed part of the display; it looked like a parked UFO.

Select media were allowed to drive a pre-production car. "It's a show-stopper," wrote *Autocar*'s Michael Taylor. "A normal Murciélago will stop traffic and turn heads. A Reventón will snap necks and clog city streets for hours.

"And that's the point, because it drives exactly like an LP640, right down to the paddle-shift gearbox that hates and jerks its way through the multi-point turns the wide turning circle [12 meters] demands. It's this system that is probably the low-light, particularly on a car with a €1 million price tag on it. Plus tax."

Still, at least the carbon-ceramic brake discs that were a very necessary option on the Murciélago came as standard. In any case, the rarefied price didn't act as a disincentive to purchase; Lamborghini had an orderly line of over 20 putative buyers after just one showing of a quarter-scale model in Santa Monica, California.

For those unlucky enough to miss the opportunity to buy one of the 20 Reventóns in 2007, Lamborghini obliged two years later with something equally stunning—but rarer still. As the wraps came off the Reventón Roadster at the 2009 Frankfurt Motor Show, 12 of the 15 examples to be built had already been sold. The price tag? €1.1 million. At this rarefied level, the frigid outlook for the global economy held little relevance: this, for sure, was a cast iron investment as well as an object of singular beauty.



Powers of hyperbole temporarily deserted Lamborghini's product planners as they named the Roadster's color, which was similar to the coupe's but a couple of grades lighter, "Reventón Grey." Again, the matte metallic looked sensational in the flesh, set off neatly against glossy Y-spoked alloy wheels with matte carbon winglets that were reckoned to aid brake cooling.

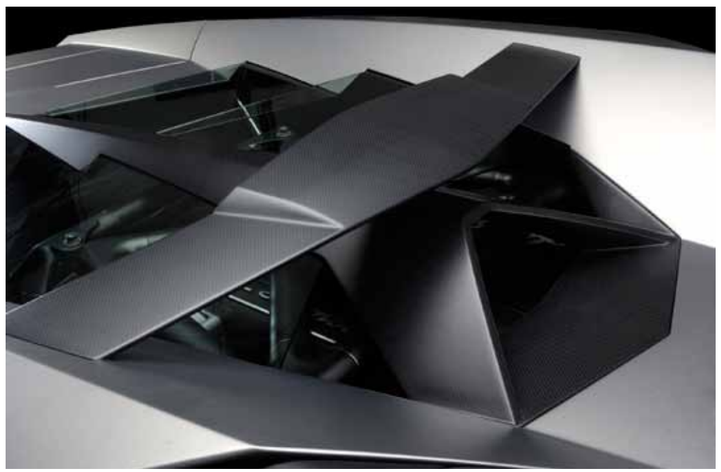
The Reventón Roadster gained just 25 kilograms in the process of losing its roof, since the existing spaceframe structure was claimed to have sufficient torsional rigidity without too much additional bracing being required. As with the coupe, the bodywork was mostly composite, with the exception of the skins of the scissor doors, which were steel. Most of the Roadster's modest weight gain can be accounted for by the mechanisms behind each seat designed to rapidly deploy a pair of roll hoops if they detect that the car is in the process of turning over. The other addition was a crossmember behind the seats with a high-level brake light—a mandatory safety feature in many countries. As with the coupe—and, indeed, the Murciélago—the trailing edge of the rear deck doubled as a stability-boosting wing that moved automatically to two different angles of attack, the first at 80 miles per hour and the second at 136 miles per hour.

To (over)compensate for the additional weight, Lamborghini gifted the Roadster the most powerful derivative of the V-12 in its arsenal, the SV. Boasting 670 PS (661 brake horsepower), this gave an extra 20 brake horsepower over and above the additional 10 brake horsepower gained by the coupe. Thus, the Roadster lost nothing in theoretical performance, completing the 0–60 miles per hour dash in a claimed 3.4 seconds, while its driver got to enjoy the soundtrack of a mighty V-12 lump that was blood-curdling enough when fully enclosed in the Murciélago SV. It was spectacular at rest, too, because the Reventón Roadster's rear deck had a more extensive glazed area than the coupe's, offering walk-by spectators a tantalizing view of the merchandise.

With the Roadster's targa roof off, passers-by also got a better view of the Reventón's spectacular Alcantara-trimmed cabin. Owners would probably prefer them

not to touch, which was a pity, because much of the real estate within was highly tactile: the housing for the liquid-crystal dashboard displays, for instance, was CNC-milled from aluminum billet and trimmed in carbon fiber.

As Lamborghini's brand director, Manfred Fitzgerald, said: "Many people around the world require a practical justification for buying such a car, but buyers in this league are more willing to indulge life. It's not a question here of straightforward product benefits, but of a work of art. We're selling dreams."




Lamborghini

Automobili Lamborghini

SPECIFICATIONS

Reventón	
Chassis	Tubular steel monocoque
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated carbon-ceramic discs with ABS, ASR, and ABD
Wheelbase	2665 mm
Front/rear track	1635 mm/1695 mm
Wheels/Tires	18 in × 8.5 in, Pirelli PZero 245/35 (front); 18 in × 13 in, Pirelli PZero 335/30 (rear)
Engine	Rear longitudinal-mounted 60-degree V-12
Bore/Stroke	88 mm/89 mm
Cubic capacity	6496 cc
Compression ratio	11.0:1
Maximum power	641 bhp at 8000 rpm (Roadster 661 bhp at 8000 rpm)
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Lamborghini electronic fuel injection, individual coils
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed e-gear robotized manual
Transmission	Four-wheel drive
Clutch	Dry single-plate
Dry weight	1665 kg (Roadster 1690 kg)
Top speed	211 mph (Roadster 205 mph)

AVENTADOR

WITH FORMULA 1 RACE CAR BUILDER MCLAREN joining the supercar arena, Lamborghini had another technically advanced, competent, and ambitious competitor to face as it developed a replacement for the Murciélago. All this and a sales-throttling global recession, too. It would have been easy, therefore, to serve up a warmed-over version of the Murciélago's underpinnings in a shiny new bodyshell.

RECALIBRATING THE SUPERCAR FORMULA

With the Aventador, Lamborghini not only embraced monocoque chassis construction for the first time, but it also made the "tub" completely out of carbon fiber.

But Lamborghini, even under Audi's prudent ownership, has never been one to do half a job. The Aventador, which arrived in 2011, wasn't just a step forward in engineering terms—it represented, in many ways, a break from the past, though it still could not be anything other than a Lamborghini. Its pleasingly iambic nomenclature came not from a bull breeder (Miura) or a bull breed (Gallardo), but from a specific 1,118-pound fighting bovine whose career came to a bloody end at the hands of celebrated matador Emilio Munoz in the Plaza de Toros de Zaragoza in October 1993.

The chassis reversed the principles of the Murciélago, which in traditional Lamborghini style was based on a steel tube frame and largely clothed in carbon fiber panels, but for the steel roof and doors. For the Aventador, Lamborghini designed a completely new carbon fiber monocoque chassis, with aluminum subframes front and rear to carry the suspension and engine and enable an element of repairability after minor accidents. This set it on the road to a considerable weight reduction of 90 kilograms over the Murciélago, the equivalent of instructing a healthy adult passenger to take the bus instead.

Let us turn to the other part of the newer car's nomenclature: LP700-4. Dividing 691 brake horsepower (700 PS in the European methodology of power measurement, hence the name) between the four wheels compared with its predecessor's 632 brake horsepower, the Aventador gained a reasonable power bump to accompany its lower weight, but with no increase in engine displacement from 6.5 liters. The occupant of the engine bay was completely new, shorn of any link with the original Bizzarrini V-12.

Lamborghini's new-generation V-12 had a bigger bore and shorter stroke (95 millimeters × 76.4 millimeters versus 88 × 86.8), which, naturally, made it more eager to rev, although it also had greater torque than its predecessor. Although the additional horses arrived slightly higher up the rev range, peak torque came a little lower at 5500 rpm; thus, the signature Lamborghini appetite for revs was not only preserved but amplified, along with the muscular bellow, in a more accessible package.

The extrovertly crisp-edged styling of the Aventador was the work of former Alfa Romeo designer Filippo Perini, who cited fighter jets as inspiration for the car's neat integration of form and function: all the bodywork apertures serve radiators, brake ducts, or air intakes, albeit with an artistic flourish. The body flares outward at the rear in typical Lamborghini style before folding sharply back on itself in a flurry of insectoid zigzags, capped by a retracting tail spoiler that only deploys at speed. While its outline is simple, and largely composed of unbroken flowing lines, the Aventador's flamboyant V-shaped detailing recalls the stark functionality of the Northrop B-2 Spirit "stealth bomber" and Lockheed F-117 Nighthawk. Lamborghini Centro Stile, you feel, is staffed by people unfazed by the knowledge that their work must be nothing less than stunning. Acknowledged Perini:

> A designer working here has a *little problem*. He has to design something that respects the quantity and the quality of the work done by past designers, while bearing comparison with iconic cars such as the Miura, Countach, Murciélago, and Diablo. Just think of these names; our cars almost always become design icons.
>
> We are the only supercar brand that can afford to build a car with a single line connecting front and rear. This is achieved through the package itself: all the masses and mechanical components are contained within the wheelbase. Then we vary the recipe. We can add some sensuality to the line that connects the fender to the belt line in a fluid, clean way. The upper section of the car is linear; in the side view we have another important line that flows in space in a very important way—this is the "tornado line" that connects the front of the car to the tip of the spoiler.
>
> One of the departures from the Murciélago is the position of the engine radiators at the side, where the need for an air opening enabled us to create an extremely sculpted surface.
>
> While for the overall design we took inspiration from aeronautics, the rear was a big departure. The rear surface angle is the reverse of what we are used to seeing, which creates a dynamic effect.

Also new was the seven-speed ISR (Independent Shifting Rod) automated manual gearbox, which, while not offering quite the panache of the VW Group's twin-clutch DSG system, was faster than the Gallardo's e-drive—offering shift times of 50 milliseconds—and at 70 kilograms it was lighter and more compact than DSG. At launch, Lamborghini promised the transmission would convey an "emotional shifting feel" and that gear shifts would occur "virtually in parallel." In theory, while one shifting rod moves out of gear, another is engaging the next one; there are four shifting rods in all, each hydraulically actuated via a high-pressure system running at 60 bar.

As was modish at the time, the manner of the gear change was driver-selectable according to three modes: Strada, Sport, and Corsa. Strada was envisioned as an everyday use mode, with a focus on comfort, offering fully automatic shifting. Sport was a more aggressive performance mode, while the track-biased Corsa mode gave the fastest shifts. As ever with such systems, these were quickly outed as a pointless gimmick; no road tester worth their salt, and very few customers, were interested in cruising around in fully automatic mode, and Corsa was just too violent for everyday use (*Road & Track* wrote that it "bangs cogs home like a Top Fuel car leaving the line"). The launch control function would win most traffic light grands prix; the driver slams the gear home and the car springs away from a standing start with a minimum of wheel chatter at the cost of a sensation akin to being rear-ended by a 10-ton truck.

Though lighter than its forebears, the Aventador occupies a similar amount of road real estate; and while its cockpit offers more room for its occupants to flex their limbs, thanks to the more compact drivetrain, luggage capacity stretches no further than a small compartment up front and a slim pair of pockets in the leather-lined cabin. Never mind: the genuine millionaire can get by with just their wallet, buy a new wardrobe at their destination, and then leave its contents for the maid at checkout.

Still, as ever when a new supercar is launched into a chilly economic climate, the Aventador prompted some scribes to consider the philosophical implications of owning such an extravagantly impractical conveyance. Andrew Frankel wrote in *Autocar*:

> As a thing to drive, the Aventador is as safe as anyone could reasonably expect a 691bhp supercar with sub-3.0sec 0–62mph capability to be, but as a device to distract other drivers from the road ahead, its powers may be unprecedented. You might never crash yourself, but you're going to see plenty. But is this not exactly what owners seek from such a car? Is a Lamborghini Aventador, like its forefathers the Murciélago, Diablo and Countach, not an attention-seeking device first and a thoroughbred driving machine second? Maybe, but that doesn't mean its existence is not to be celebrated. Among mainstream production cars—which excludes esoteric models such as Paganis and Koenigseggs built in single or double-digit numbers—the Aventador now stands alone. Although the Aventador is laden with state-of-the-art technology, at its heart it remains a supercar of the old school, a massively wide, impossibly low machine powered by an outrageously powerful and classic normally aspirated V12—words that would have applied no less accurately to the Countach at its first public showing more than 40 years ago.

As with any supercar in development, the Aventador wore a heavy disguise during track testing at the prototype stage to thwart "scoop" photographers. ***Automobili Lamborghini***

An extra 50 kilograms of chassis bracing barely blunts the Aventador's performance in Roadster form; it is just 0.1 seconds slower in the 0–62 miles per hour benchmark, and quoted top speed is identical. *Automobili Lamborghini*

Aventador LP700-4 Roadster	
Chassis	Carbon fiber monocoque, aluminum front/rear frames
Suspension	Pushrod-actuated horizontal mono-tube dampers front/rear
Brakes	Carbon-ceramic with 6-piston calipers front, 4-piston calipers rear
Wheelbase	2700 mm
Front/rear track	1720 mm/1700 mm
Wheels/Tires	19 in × 9J, Pirelli PZero 255/35 ZR19 (front); 20 in × 12J, Pirelli PZero 335/30 (rear)
Engine	Rear longitudinally mounted 60-degree V-12
Bore/Stroke	95 mm/76.4 mm
Cubic capacity	6498 cc
Compression ratio	11.8/1
Maximum power	690 bhp at 8250 rpm
Valve gear	Dual overhead camshafts; electronically controlled variable valve timing
Fuel/ignition system	Lamborghini electronic fuel injection
Lubrication	Dry sump
Gearbox	Lamborghini 7-speed ISR
Transmission	Haldex IV four-wheel drive
Clutch	Dry double-plate
Dry weight	1625 kg
Top speed	217 mph

Removal of the roof does not detract from the Aventador's appearance, but the carbon fiber panels that act as a temporary hard top eat up luggage space when stowed. ***Automobili Lamborghini***

AVENTADOR ROADSTER

If in the unlikely event that the Aventador did not provide enough theater, Lamborghini resolved that issue by launching a roofless model in 2013, along with a new color, Azzuro Thetis, a timeless pale blue hue that evoked Mediterranean idyll. As a piece of engineering, the Roadster was remarkable; yes, the removal of the roof necessitated additional structural bracing, and therefore weight (to the tune of 50 kilograms), but in pure performance terms that amounted to . . . not very much. It would be persnickety indeed to declaim the Roadster as a lemon because its benchmark 0.62-miles per hour time was 0.1 seconds slower than its roofed sibling's. In any case the top speed, should you find a road long, straight, and unpoliced enough, was identical at 217 miles per hour

Better still, design chief Filippo Perini had actioned the drop top with exquisite care, resulting in a car that to some eyes was even more beautiful—if that were possible—than the coupe. Its temporary hard top came in the form of two six-kilogram carbon fiber panels, both delightfully crafted, which could be removed in moments and stowed in the luggage compartment under the hood.

And there, as Shakespeare put it, lies the rub. With the roof off and the panels occupying the luggage compartment, the adventurous Aventador owner would have to sally forth equipped with not much more than his or her cellphone and a toothbrush. It would be churlish to point out the impracticality of this arrangement, but, still, someone had to do it.

"So," one American journalist asked Lamborghini CEO Stephan Winkelmann during a Q&A at the car's launch in Miami, "what do we do with our luggage? Send it by FedEx?"

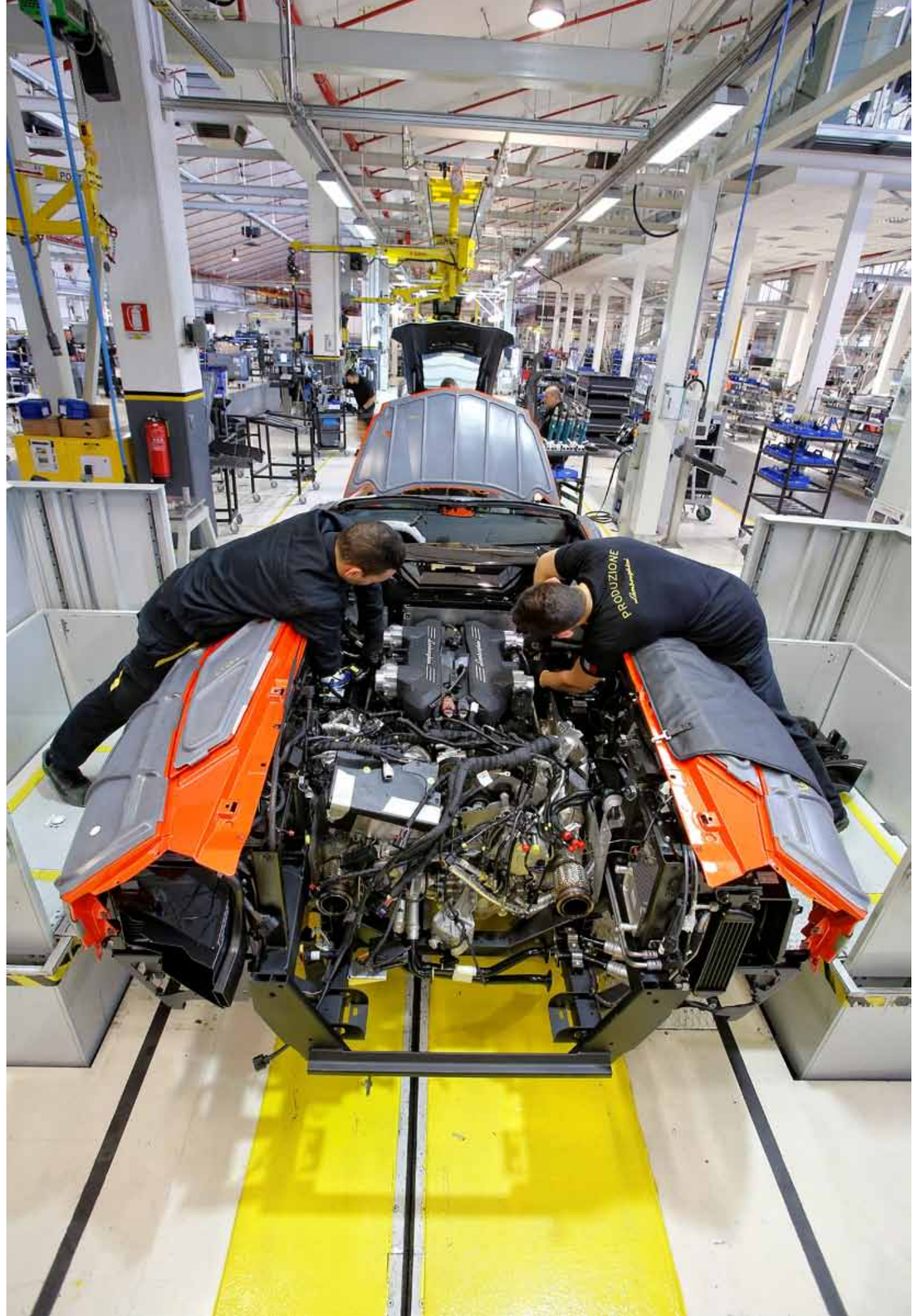
The urbane and well-educated Winkelmann batted the question out of the park without missing a beat: "You travel to your destination with the roof up, then, when you've checked in to your hotel, and your bags are out of the car, you can have some fun with the roof off."

The launch of the Roadster coincided with the rollout of new gear shift software on both models that was intended to make ratio changes more civilized, but the transmission still left many test drivers discombobulated.

"Fast up-shifts are still akin to being kicked in the head," complained Jason Barlow in *Top Gear*. "Maybe Lamborghinis are meant to be borderline thuggish, but the transmission remains deeply flawed. In full auto mode around town, it's arguably even worse, a lurching throwback to the earliest days of semi-autos, when dinosaurs still roamed the land. Dual-shift gearboxes might be heavy and difficult to package, but once you've tried a good one there's no going back."

Cro-Magnon transmission apart, there was no doubt that the Aventador—in both coupe and Roadster forms—still offered a driving experience like no other. "As absurd as it sounds for a £294,665 [$441,000] car, the Aventador Roadster is good value," concluded Nick Trott, editor of the UK-based performance car bible *Evo*. "There is no other new rival (on price) that can get close to delivering the wildly acute supercar experience. There are greater driving thrills to be had from the Ferrari 458, and a McLaren 12C feels every bit as quick, but to enjoy a more visceral supercar you need to spend another £500,000 [$829,000] on a Pagani Huayra. Saying that, the Pagani's (AMG-made) engine is nowhere near as charismatic as the Lamborghini's."

True. This was a car about sight and sound. Just don't expect to converse with your passenger over 75 miles per hour.



OPPOSITE: To achieve Lamborghini's signature wedge-profiled body, the contents of the Aventador's engine bay are very tightly packaged. *Automobili Lamborghini*

"The Aventador," wrote *Top Gear*'s Jason Barlow, "could have the dynamics of a supermarket shopping trolley with a wonky wheel and it probably wouldn't matter that much to its core audience. This is about seeing, and being seen in."

Thus, the Aventador continued the millennial Lamborghini tradition of being offered in a number of punchy hues, as if the cars weren't conspicuous already. Only Nero Aldebaran (black) or Giallo Evros (yellow) were available at the basic price, with others on the option menu at additional cost: Bianco Isis (white), Nero Pegaso (metallic black), Grigio Antares (light gray metallic), Grigio Estoque (gunmetal metallic), Blu Hera (dark blue metallic), Giallo Orion (pearlescent yellow), Arancio Atlas (pearlescent orange), Arancio Argos (a more vivid, almost red pearlescent orange), Marrone Apus (matte chestnut), Bianco Canopus (matte white), and Nero Nemesis (matte black). Beyond that, Lamborghini offered buyers wanting a touch more exclusivity the option of painting the car in any shade of their choice, within the bounds of technical possibility. Add in wheel rims from black (both reflective and matte) through to silver and titanium, customizable interior trim, and a voluminous accessories catalog that ran to tire valve caps with Lamborghini logos, and you have a car of which very few examples could be called "standard."

Perhaps as a concession to a slightly older demographic—on launch, prices started at $392,000, and bankers' bonuses were under scrutiny at the time—entry and egress is easier and more elegant, owing to the lower sills and friendlier door apertures, and the seats are softer. The controls are laid out with an element of logic and can be reached without leaving the driver's seat. The all-digital Gran Turismo–style instrument panel proved to be an acquired taste for many owners, but it put very few people off; the first year's production run was sold out even before the first customers took delivery in the summer of 2011, and at the time of writing more than half of the planned 4,000 examples had been sold.

For those with a mind to drive, rather than pose, the Aventador offered a challenging but much more accessible experience than its predecessors, genuinely blurring the dividing line between supercar and hypercar. The Haldex IV all-wheel-drive system gave superb traction, delivering all 691 brake horsepower to the road with barely a chirrup of protest from the enormous tires. Considering its imposing physicality and fairly substantial weight, it changed direction quickly and offered incredible lateral grip. But this came with a small caveat: the limits were so high, and the car so wide, that you could only sensibly explore the fringes of its capabilities on track—as, of course, with so many Lamborghini supercars past. In early 2014 a video of an Aventador smashing into a number of parked cars on London's Sloane Street after a Mazda pulled out in front of it went viral on the Internet, to predictable *schadenfreude* in the comments sections that are now de rigueur on newspaper websites.

"With enough space," wrote Chris Chilton in *Road & Track*, "the Aventador can be coaxed into a slide, but you'd be coaxed into a rear-fastening cardigan if you tried it on the road. Choose neat, choose to live. . . . You tread the line between grip and slip in the Lamborghini as if you're hiking across the demilitarized zone between North and South Korea."

Journalistic hyperbole apart, there was no doubting that Lamborghini had taken a great and very necessary step in the evolution of the supercar. During the gestation and launch of the Gallardo, industry insiders had questioned whether the "baby Murciélago" would make the car above it in the range irrelevant. Any new halo car would have to be quantifiably better than its predecessor in every way.

The 2,000th Aventador left the production line in mid-2013. Lamborghini had built only 2,042 Countachs in the course of its 16-year life. That's progress.

Arancio Argos joined the Lamborghini palette for the Aventador's launch and has become one of the most popular color choices for the car. *Automobili Lamborghini*

Aventador LP700-4

AVENTADOR J

How much great art has been conjured by whim alone? The eye-popping Aventador J, which stopped the 2012 Geneva Motor Show in its tracks, was produced in just a month and a half after Lamborghini CEO Stephan Winkelmann decided the manufacturer needed "something special" for the show. Design boss Filippo Perini gladly hastened to his drawing board.

"It was January 14 that Mr. Winkelmann asked us to do something for Geneva," said Perini. "A blank sheet. Do what you want. I drew up this car in a weekend. . . ."

Chassis, engine, transmission, and dashboard apart, the Aventador J shared just the hood, rear fenders, and headlights with the donor car. Every other exterior panel was new, from the Le Mans Prototype-style front wing to the twin humps behind the seats that flanked a Y-shaped carbon fiber crossbrace. The pylon-mounted rear-view mirror recalled the eccentric Eiffeland Formula 1 car of the 1970s, and the seats were similarly race-bred, formed from composite materials and a patented carbon fiber fabric.

The *J* was an explicit reference to the Miura Jota, Lamborghini's last extreme one-off car. And, needless to say, the one-off car—which was homologated for road use—had found a buyer even before it was revealed at Geneva. For $2.8 million, one of Lamborghini's best customers had laid their hands on a remarkable piece of automotive art.

L539: THE ALL-NEW V-12

It was the kind of open brief engineers crave. In closing the door on five generations of the original Bizzarrini V-12, a beast whose character is enshrined in the company's very DNA, Lamborghini gave its R&D team, led by chief engineer Maurizio Reggiani, just two absolute musts: the new engine, codenamed L539, had to be a V-12, and those cylinders had to be banked at 60 degrees. This at a time when key rivals such as Ferrari were downsizing and adding turbos, if not going the whole hybrid hog.

Thus, while the L539 also turned out at 6.5 liters, the internals were treated to some fresh thinking with an eye on efficiency as well as outright power. Wider bores (up to 95 millimeters from 88) and shorter stroke (down to 76.4 millimeters from 89) account for reduced frictional losses as well as liberating more power (691 brake horsepower, up from 632) at slightly higher revs (8250 rpm). Torque rose to 509 pounds-feet at 5500 rpm from 486 pounds-feet at 6000 rpm.

Extensive use of aluminum-silicon alloy in the block and cylinder heads contributed to a lower weight of 235 kilograms—the old unit tipped the scales at 253 kilograms—even though the new V-12 had more complicated plumbing, with eight scavenging pumps to reduce pressure and switchable water circuits to expedite warm-up to optimum temperature.

Some detail elements of the engine and transmission spec were questioned at launch: direct fuel injection proved too challenging to perfect in the project's timeframe, though it hasn't been ruled out for the future. And, while the seven-speed, single-clutch ISR (Independent Shifting Rod) automated manual gearbox was lighter than the twin-clutch DSG arrangement popular elsewhere in the VW Group range, it lacked some of that transmission's sweetness . . . plus there was no manual option, which cut against some European tastes. Still, it was more compact than the outgoing transmission.

And, 50 years down the line, Bizzarrini finally got his way: the new engine was dry-sumped, making it more vertically compact, with all the benefits that brings to a car's center of gravity. He would, you feel, have approved.

AVENTADOR LP720-4 50TH ANNIVERSARIO

Lamborghini celebrated its 50th anniversary in style with an even more extreme version of the Aventador, though the 19 brake horsepower bump in power output (710 brake horsepower, or 720 PS, whence the model got its name) did not manifest itself in a faster sprint to the 0–62 miles per hour benchmark or a stretch beyond the standard model's 217-miles-per-hour top speed.

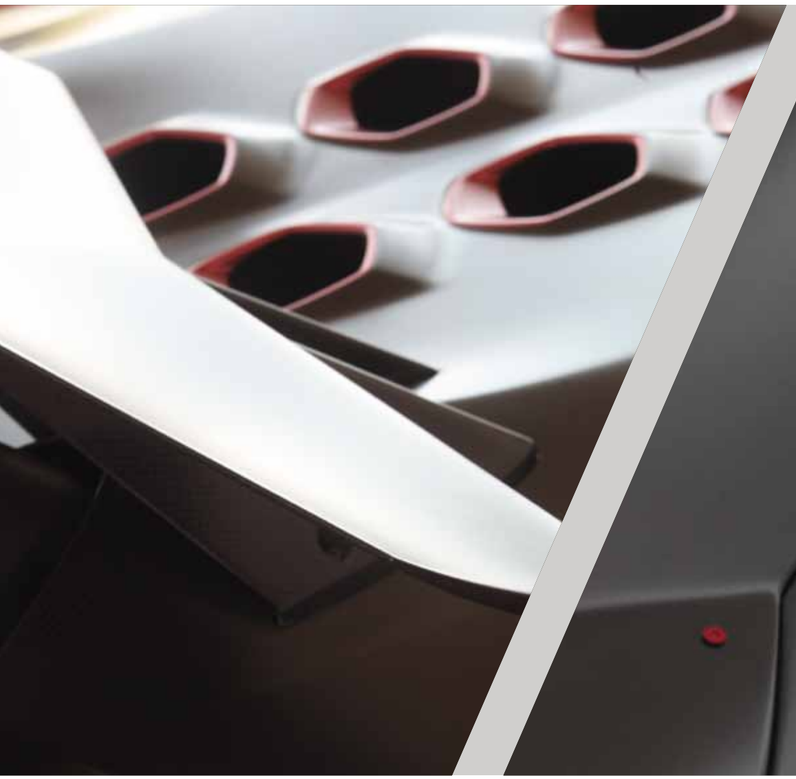
What buyers did get for their $498,000 was guaranteed exclusivity: just 100 numbered models were built, in a new one-off color, Giallo Maggio, with matching "Q-Citura" quilted interior details, though customers naturally had the option of having their car in a color of their choice. The new, more brazen front spoiler and rear diffuser were marked out in black. A Roadster version followed, also limited to 100 units, and each retailed at $548,000.

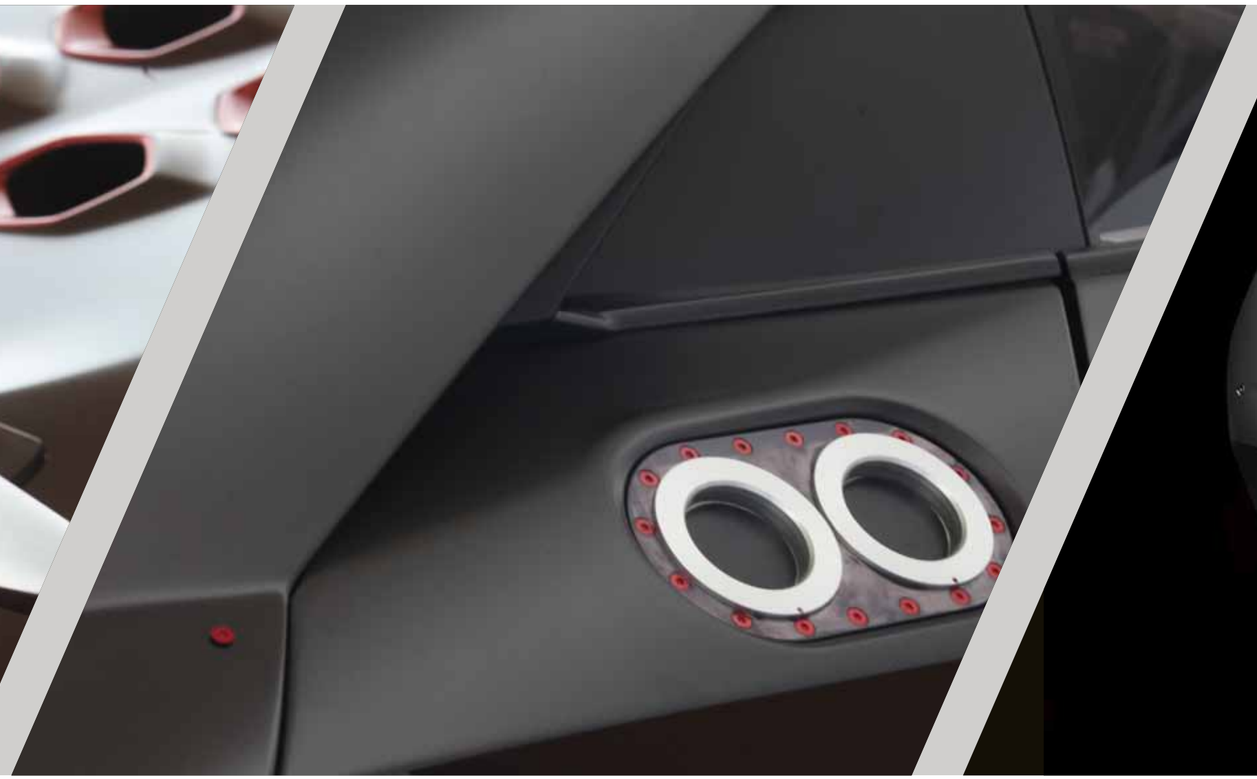
Aventador LP700-4

Chassis	Carbon fiber monocoque, aluminum front/rear frames
Suspension	Pushrod-actuated horizontal mono-tube dampers front/rear
Brakes	Carbon-ceramic with 6-piston calipers front, 4-piston calipers rear
Wheelbase	2700 mm
Front/rear track	1720 mm/1700 mm
Wheels/Tires	19 in × 9J, Pirelli PZero 255/35 ZR19 (front); 20 in × 12J, Pirelli PZero 335/30 (rear)
Engine	Rear longitudinally mounted 60-degree V-12
Bore/Stroke	95 mm/76.4 mm
Cubic capacity	6498 cc
Compression ratio	11.8:1
Maximum power	690 bhp at 8250 rpm
Valve gear	Dual overhead camshafts; electronically controlled variable valve timing
Fuel/ignition system	Lamborghini electronic fuel injection
Lubrication	Dry sump
Gearbox	Lamborghini 7-speed ISR
Transmission	Haldex IV four-wheel drive
Clutch	Dry double-plate
Dry weight	1575 kg
Top speed	217 mph

SESTO ELEMENTO

THE SESTO ELEMENTO, unveiled to the public at the 2010 Paris Motor Show, provided yet more evidence of Lamborghini's ability to turn a whim into an object of electrifying lust. What began life as a concept car—or, in Audi-era Lamborghini parlance, "a unique technology demonstrator"—swiftly persuaded enough of the company's wealthiest customers to vote with their wallets. At Frankfurt the following year, Lamborghini announced that a limited production run would become available in 2013, priced over $2 million; they were all sold before the first (of 20) was completed.





ALL THE POWER NONE OF THE WEIGHT

Its name riffs on the periodic table of the elements, the sixth of which is carbon. Extensive use of carbon fiber all through the car's construction enabled Lamborghini to make it "extremely lightweight," although when you're talking about a car occupying this much real estate, and with a V-10 engine and all-wheel drive, these things are relative: it still tipped the scales at 2,202 pounds, just under 1,000 kilograms. Still, that's under two-thirds the weight of a Chevrolet Corvette C7 (3,298 pounds), and much lighter than the Gallardo LP 570-4 Superleggera (2,954 pounds) that donated the drivetrain. When you consider that the standard Gallardo, which is in the same dimensional ballpark as the Sesto Elemento, weighed 3,307 pounds, you'll appreciate how rigorous the paring-down process must have been.

This car represented a strategic shift to embrace ongoing changes in the automotive world, namely the need to increase efficiency—or to be seen to be doing so. It's a troubling proposition for any supercar manufacturer, but especially one whose brand is predicated upon brutal, muscular performance. Thus, rather than downsizing its engines, Lamborghini targeted extreme weight loss.

EGOISTA

If the Veneno and its Roadster variant were mere "celebrations" of Lamborghini's 50th anniversary, the Egoista was Lamborghini's birthday present to itself—or, more accurately, a token of esteem from the parent group for the brand's rebirth and runaway success. Shown to the public—well, a select gathering of VIPs—for the first time at the end of a massive 350-vehicle grand tour of Italy, the sole Egoista was driven by company president and CEO Stephan Winkelmann onto a stage that had been designed to mimic a landing strip.

Based on Gallardo underpinnings, the most extreme Lamborghini show car ever was actually designed by VW stylists under the eye of Group Head of Design Walter de Silva. The sharply creased exterior, with a single-seat cockpit influenced by the Apache helicopter and the hunched fenders shaped to suggest a bull with its horns down, ready to charge, was the work of Alessandro Dambrosio.

"The bull is driving towards the front wheels," claimed the Lamborghini press materials, "conferring a futuristic dynamism and lines which are already, in themselves, highly aggressive."

De Silva explained the rationale behind the single seat: "This is a car made for one person only, to allow them to have fun and express their personality to the maximum. It is designed purely for hyper-sophisticated people who want only the most extreme and special things in the world. It represents hedonism taken to the extreme; it is a car without compromises, in a word: egoista [selfish]."

The cockpit was a confection of aluminum and carbon fiber and actually removable, in the same way that the cockpit of an Apache helicopter doubles as a survival cell and can be ejected when the aircraft is in trouble. Interior designer Stefan Sielaff mingled cues from fighter aircraft with race cars, specifying a futuristic heads-up display, a four-point harness, and a steering wheel that has to be removed in order for the driver to effect entry and egress. There was even a specified method of getting in and out, complete with no-walk zones indicated on the bodywork, as on airplane wings.

No modern Lamborghini is complete without stealth fighter overtones, and the Egoista combined UFO-for-the-road lighting effects—on first glance it doesn't have headlights as such, but aircraft-style LED clearance lights—with bodywork made from composites finished in an anti-radar material, plus a pair of moveable flaps on the rear deck. The twin xenon headlights are concealed in the void between the nose cone and the fender pontoons.

The 592-brake-horsepower Gallardo-derived V-10 itself was left on display to aid cooling, add a note of aggression, and to encourage spectators to gawp.

"If Lamborghinis are cars for the few, this one goes further," summarized the press materials. "It is a car for itself, a gift from Lamborghini to Lamborghini, resplendent in its solitude. The Egoista is pure emotion, Never Never Land, which no one can ever possess, and which will always remain a dream, for everyone."

Such extreme whimsy was not for everyone, and the Egoista certainly polarized the Internet commentariat, but seen in the metal (and carbon fiber) it is an extraordinary piece of work. It is now permanently on display in the Lamborghini Museum, where you can judge for yourself.

Lamborghini President and CEO Stephan Winkelmann was unequivocal: "The Sesto Elemento shows how the future of the super sports car can look—extreme lightweight engineering, combined with extreme performance, results in extreme driving fun. We put all of our technological competence into one stunning form to create the Sesto Elemento. It is our abilities in carbon fiber technology that have facilitated such a forward-thinking concept, and we of course also benefit from the undisputed lightweight expertise of Audi. Systematic lightweight engineering is crucial for future super sports cars: for the most dynamic performance, as well as for low emissions. We will apply this technological advantage right across our model range. Every future Lamborghini will be touched by the spirit of the Sesto Elemento."

Beyond the glitter of marketing hyperbole, how did Lamborghini do it? The secret lies in the detailing, which is exquisite and imaginative. Naturally the monocoque is carbon fiber, as per the Aventador (which was in the late stages of development when the Sesto Elemento was unveiled, and launched in 2011); the seat moldings also form part of the "tub," dressed with ultra-thin padding. To adjust the driving position, the occupant has to move the pedals and steering column relative to the fixed seat.

The front subframe, crash structures, and exterior panels are formed in carbon fiber-reinforced polymer, which Lamborghini claimed as a first, saying, "The super sports car brand from Sant'Agata Bolognese is the only vehicle manufacturer in the world to have mastered the complete CFRP process across a range of technologies, from 3D design through simulation, validation, production, and testing—all in a state-of-the-art industrial process that stands for the very highest quality standards."

The rear subframe, incorporating the engine mounts and rear suspension contacts, is aluminum, while the exterior construction gives a salutary nod toward the Miura. The bodyshell is actually two elaborate single-piece moldings (the roof is part of the monocoque) front and rear, which Lamborghini called "cofango covers" with the aerodynamic components bonded in. The doors are each made of just two separate moldings, bonded together, while the exhaust tailpipes are a glass-ceramic matrix composite called Pyrosic. Most of the suspension components are carbon fiber.

Lamborghini's expertise in composites is not just marketing bluster; the company holds a number of patents and has partnered with a number of others, including Boeing during development of the 787 Dreamliner, to create new molding technologies. In 2007 it founded the Automobili Lamborghini Advanced Composite Structures Laboratory at the University of Washington in Seattle, partly funded by Boeing and the Federal Aviation Administration.

The Sesto Elemento was the first car to demonstrate what Lamborghini calls Forged Composite technology, which was developed in collaboration with Callaway, a golfing equipment manufacturer. Forged Composite is an incredibly dense carbon fiber-epoxy molding material, with around 500,000 intertwined turbostratic (a crystalline structure in which the basal planes are out of alignment) fibers per square inch. This can be hot-pressed into a mold, rather than the traditional composite technique

of layering woven sheets of carbon fiber into a mold with resin, sealing it in a vacuum, and then "curing" it under pressure in an autoclave. The upshot: more complex shapes, and the material is just as strong in every direction.

"The introduction of the Forged Composite technology allowed Lamborghini to realize the monocoque and the suspension arms of the Sesto Elemento with groundbreaking quality and costs levels," said the company's head of R&D, Maurizio Reggiani. "Our next challenge is to make this technology a standard for low-volume productions."

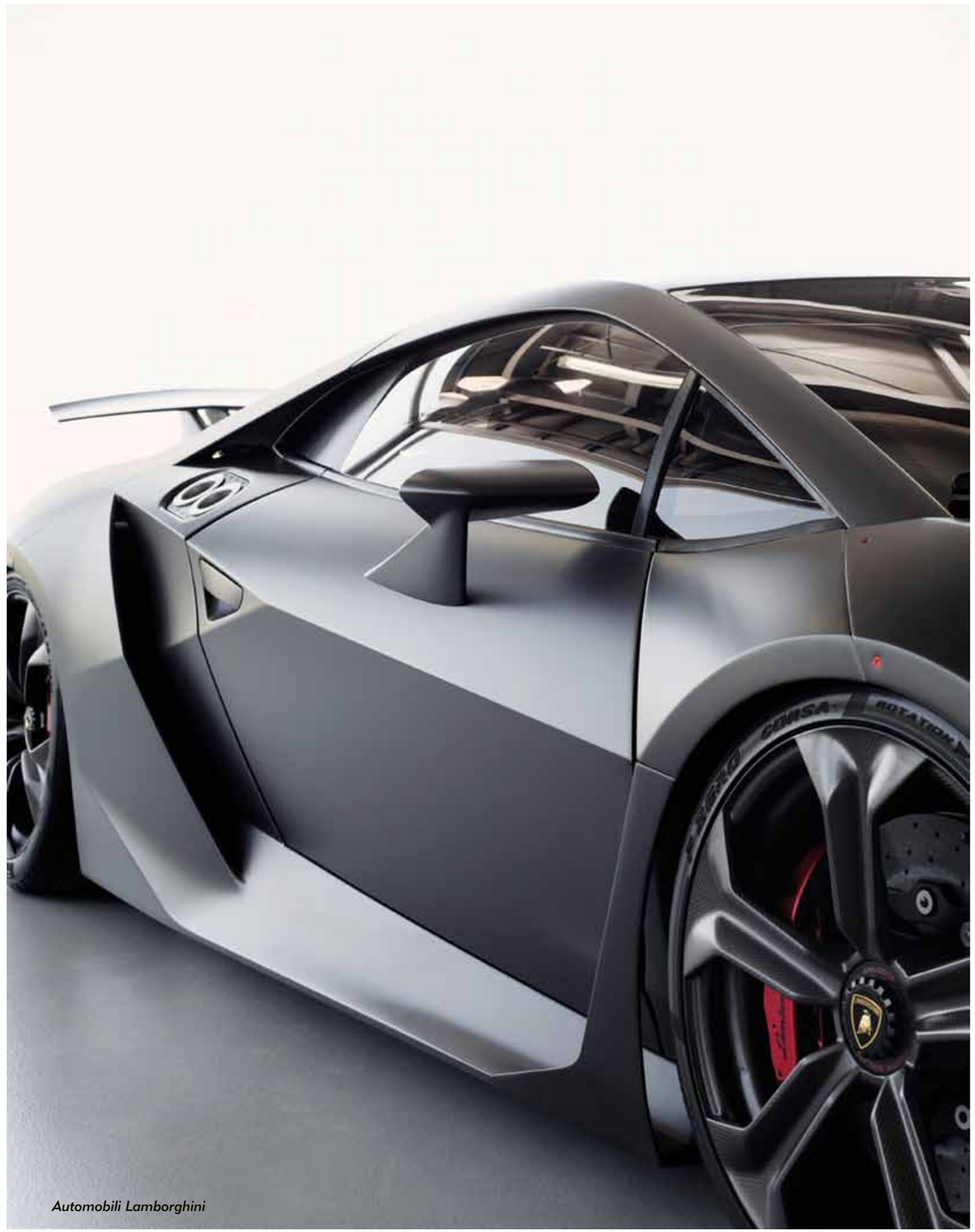
Speed of production remains a challenge for car manufacturers working with composites in the traditional way. McLaren's F1 was the first supercar to feature a carbon fiber monocoque, but just that part of the car required 3,500 man hours to complete. Modern techniques have reduced that amount, but it remains an expense that's ultimately passed on to the customer; hence the fact that carbon fiber construction remains the province of automotive exotica.

Lamborghini also holds a number of patents for its "RTM Lambo" production process, with RTM standing for Resin Transfer Molding. This gives a number of advantages over the traditional carbon fiber lay-up process; it can be cured without using an autoclave, so the molds can be lighter, and it can be more highly automated, so it's quicker. The disadvantage is that the cosmetic appearance is less optimal, so for exterior panels the conventional method is still preferred, because it can be left unpainted to show off the woven finish that customers associate with carbon fiber. On the Sesto Elemento, the body panels have a patented final coat in matte, with a layer of fine red crystals that give a shimmering red effect.

The incredible power-to-weight ratio of the Sesto Elemento gave it extraordinary performance, though the race car-style suspension made it suitable for track use only, and it is not street legal. When a privileged few road testers had the opportunity to sample the demonstrator, they confirmed what everyone expected: the Sesto Elemento makes a glorious noise, but it isn't a car to be trifled with, hitting the 0–62 miles per hour benchmark in a claimed 2.5 seconds. The anonymous racing driver known as "The Stig" on the BBC's *Top Gear* TV show managed to spin it, damaging the undertray, during a recording session at Dunsfold, the former airfield in southern England that now doubles as a test track as well as a location for movies such as *Casino Royale* and *World War Z*.

Appropriately, Sesto Elemento values are now spiraling like the budget of a Hollywood blockbuster: the highest reported price paid for one is $2.9 million.

Automobili Lamborghini



Automobili Lamborghini

Automobili Lamborghini

VENENO

After proving it could do boutique supercars with the Reventón, Lamborghini returned to the idea with a vengeance as part of the company's 50th anniversary celebrations. The Veneno, shown to the public at the 2013 Geneva show, was startlingly outré—like a racing version of the Aventador designed for a championship yet to be invented.

Just as the Reventón was in essence a re-skinned Murciélago, the Veneno took the composite monocoque, 6.5-liter V-12 four-wheel-drive drivetrain, and pushrod suspension of the Aventador and added an even more eye-catching shell. From the aggressive beak of the nose and boomerang headlights to the roof and side scoops, dorsal fin, and adjustable rear wing, the Veneno looked like a cross-breed of Audi's Le Mans–winning prototype sports cars and the stealth fighters so beloved of Lamborghini stylist Filippo Perini. The race car theme continued underneath the chassis, where the floor was flat so as to reduce drag.

Finished in modish black, the wheels (20-inch front, 21-inch rear) were sculpted to act as turbines, boosting the flow of air to the carbon-ceramic brake discs. And as a final performance touch, Lamborghini uprated the engine to deliver 750 PS (739 brake horsepower). Little wonder the company christened the car Veneno, after the bull that fatally gored toreador Jose Sanchez Rodriguez in the Sanlucar de Barrameda in 1914.

Just three examples of the Veneno were built, with a sticker price of €3 million each. "In a week when they've put a comedian in parliament and a pope in a helicopter, it's perhaps unsurprising that the Italians have also made this Lamborghini Veneno," gasped *Top Gear* magazine.

Just over a year later, Lamborghini pulled the wraps off a drop-top version of the Veneno—but, having decided that doing so at a motor show was just so *done*, it found a more outlandish platform: on the deck of an Italian aircraft carrier moored just off the coast of Abu Dhabi. The choice of that oil-rich Emirate was no coincidence; this part of the world is a hotspot for high-net-worth individuals looking to diversify their wealth away from oil, and Abu Dhabi is home to the world's first Ferrari theme park (Mubadala, an Abu Dhabi government investment fund, briefly owned a 5 percent stake in Ferrari).

Additional bracing to make up for the absence of a roof accounted for a 40-kilogram weight gain over the coupe, but the quoted acceleration and top speed figures were no different, with a sub-three-second 0–60 time and a terminal velocity of 221 miles per hour. The Veneno Roadster's rear deck was a remarkable piece of sculpture in which the line of the side scoops carried up and over the engine cover to meet the tip of the dorsal fin in a series of neat creases, like a paper airplane. And the wheelarches were also given a visual separation from the rest of the body to become like the pontoons of a sports-prototype racing car.

Perhaps the neatest marketing trick was to make the car slightly less exclusive than the coupe—nine were built, as opposed to three—and more expensive, at €3.3 million plus local taxes.

"For a list price $500,000 higher than the coupe's, you'll also get 100-percent less roof," cackled Alexander Stoklosa in *Car and Driver*. "We're not talking about a retractable job here: The Veneno roadster does not have and is not available with a roof. The car might cost upward of $4.5 million, but a poncho only costs a couple bucks and is lighter than a roof panel. Besides, roofs are for pansies—if you can't handle the elements, buy an Aventador roadster and use the $4 million you saved to buy back some dignity."

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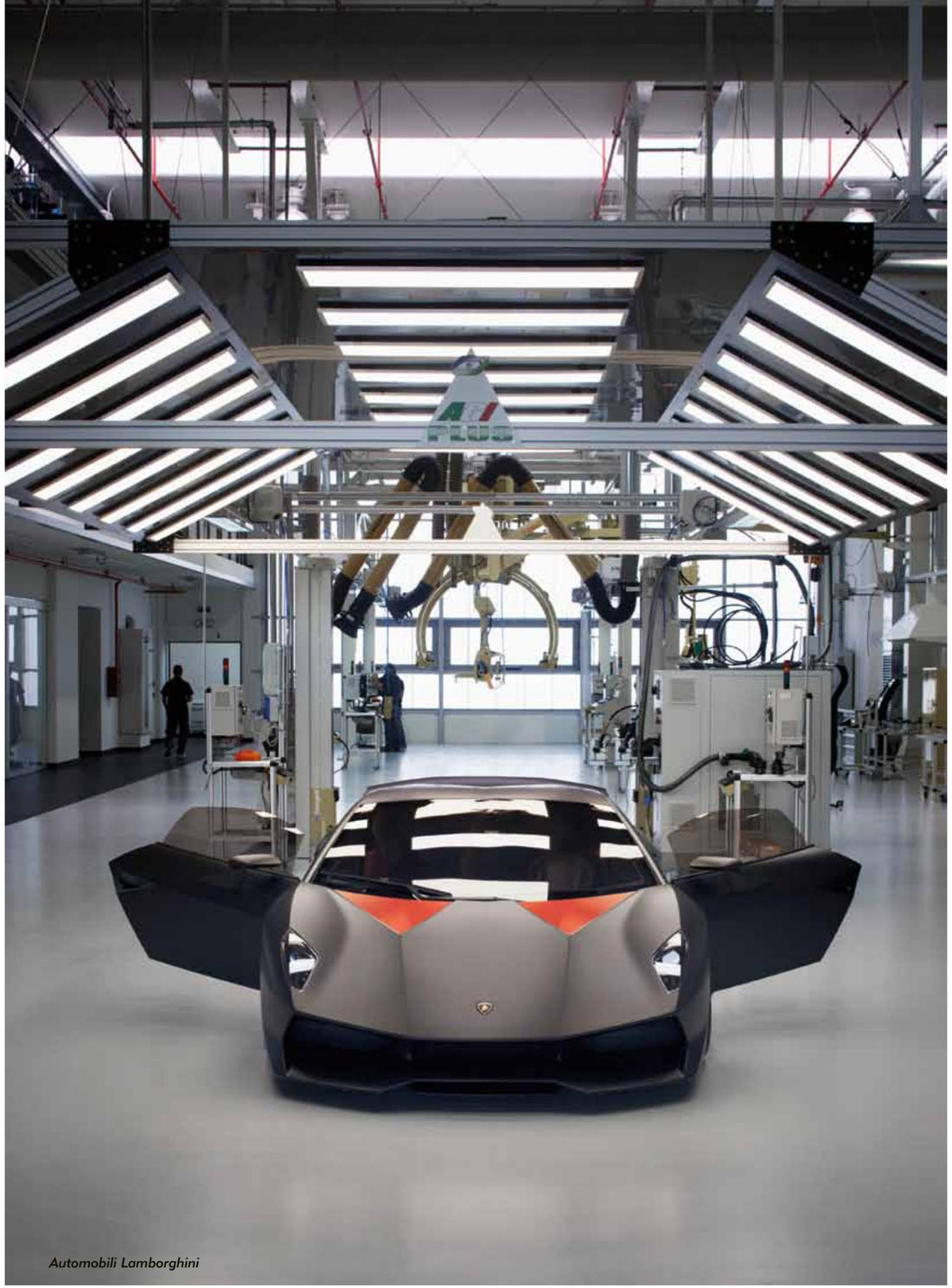

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SPECIFICATIONS

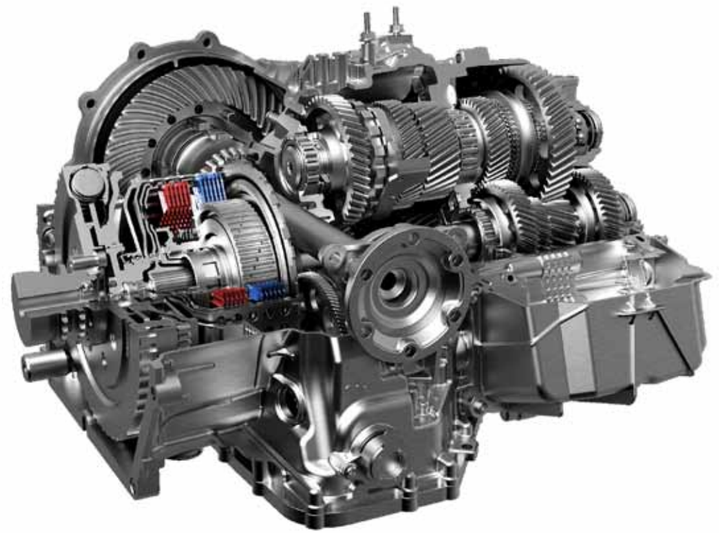
Sesto Elemento	
Chassis	Carbon fiber monocoque, aluminum rear frame
Suspension	N/A
Brakes	N/A
Wheelbase	N/A
Front/rear track	N/A
Wheels/Tires	N/A
Engine	Rear longitudinally mounted 90-degree V-10
Bore/Stroke	84.5 mm/92.8 mm
Cubic capacity	5204 cc
Compression ratio	12.5:1
Maximum power	570 bhp at 8000 rpm
Valve gear	Dual overhead camshafts; electronically controlled variable valve timing
Fuel/ignition system	Bosch MED 9
Lubrication	Dry sump
Gearbox	Lamborghini 6-speed e-Gear
Transmission	Permanent four-wheel drive
Dry weight	999 kg
Top speed	N/A

HURACÁN

HOW DO YOU REPLACE THE MOST SUCCESSFUL LAMBORGHINI OF ALL TIME?

The fatuous answer is to say “very carefully.” A more nuanced response, and one closer to the truth, is to suggest that you don’t replace it at all; you have to offer something completely different, with its own identity, that can fill the now-vacant slot in the range for a more affordable Lamborghini. Not a replacement, but a successor.

THE FUTURE IS NOW



Seven-speed dual-clutch transmission is new to Lamborghini; the Huracán is not available with a manual gearbox. *Automobili Lamborghini*

PREVIOUS PAGES: *Automobili Lamborghini*

Filippo Perini sketched the first outlines of what would become the Huracán in 2009, at which point it was simply referred to by its internal code name of LB724. These early drawings followed the stealth aircraft theme he was successfully mashing up with insectoid shapes to great effect in the Reventón, while genuinely exploring the boundaries of conventional proportions. Around the flanks and at the rear it bulged like the carapace of an exotic beetle liberated from a Victorian explorer's trophy case. Later sketches reverted to Gallardo themes, straighter-edged and with large, angular hexagonal air intakes at the front. An idea took root and Perini would incorporate many hexagonal themes in the finished design.

But there was more than just the look of the car at stake. During the Gallardo's life cycle, Ferrari had refreshed its offering at that price point twice, and McLaren had launched the 12C. Ferrari's 458 Italia was a remarkably competent and characterful machine that shamelessly riffed on the company's F1 connections—even down to the manettino dials on the steering wheel—while shielding ham-fisted drivers from their own stupidity with a number of delightfully light-touch stability control systems. Its 4.5-liter direct injection V-8 engine was a match for the Gallardo's V-10, producing 562 brake horsepower in standard form, and its adaptive magnetorheological dampers helped deliver impeccable road and track manners. McLaren's carbon-tub 12C was clearly benchmarked almost slavishly to the 458 Italia, to the extent that the two were largely indistinguishable save for the character of the McLaren's smaller 3.8-liter V-8, blown with twin turbos to 592 brake horsepower.

These rivals clearly informed the development process, and it was almost a tacit admission when Lamborghini CEO Stephan Winkelmann would later say, "With the Huracán, we wanted a car to be built with balance. The challenge for the engineers was to have a high-performance car that is easy to drive and giving you the feeling that you are a better driver than you are."

LB724 would have to be profitable as well as competitive, and this necessarily involved incorporating some Audi technical DNA while undertaking what Lambo Research & Development boss Maurizio Reggiani described as a "historical debug of the Gallardo." The spaceframe chassis—not all-aluminum like Ferrari, nor all-composite like McLaren, but a combination of the two—would be part of a shared-platform strategy, and be designed under the watchful eye of Audi R&D chief and platform-sharing champion Dr. Ulrich Hackenberg. As part of Audi's MSS (Modular Sportscar System) platform, which would also underpin the next-generation Audi R8 and other cars in the Volkswagen Group, the Huracán's chassis combined traditional aluminum spaceframe elements with composite panels made using Lamborghini's patented resin-transfer process. The carbon fiber components reinforced the floor, sills, transmission tunnel, bulkhead, and B-pillar, and were bonded to the main structure with stainless steel fasteners (sealed to prevent galvanic corrosion) in strategic areas. This would reduce weight by 10 percent (giving the complete car a dry weight of 1,422 kilograms) while improving torsional stiffness by a claimed 50 percent.

The Huracán's chassis combines aluminum and carbon fiber. Its basic platform will be shared with the next-generation Audi R8. *Automobili Lamborghini*

The rear bodywork is protected from accidental damage while the V-10 and its transmission are installed within the chassis. ***Automobili Lamborghini***

The engine and four-wheel-drive transmission would occupy its traditional *longitudinale posteriore* location but differ in several details, not least in the departure of the Gallardo's much-derided six-speed robotized manual gearbox in favor of an Oerlikon Graziano dual-clutch setup. Badged Lamborghini Doppia Frizione in this application, the seven-speed was adjustable, like its predecessor, into different shift modes to reflect how purposeful the driver wanted to be. At this level of performance, packaging a dual-clutch system is tricky, but Lamborghini was able to mount the Huracán's gearbox lower than the Gallardo's and with a slightly smaller clutch diameter (200 millimeters as opposed to 215). Elsewhere in the drivetrain, the viscous coupling for the four-wheel drive was decreed crude and outmoded, and given the boot in favor of an electrohydraulic multi-plate clutch. This enabled more sophisticated electronic control of torque delivery, channeled like the other onboard systems through a multiplex Flexray network, with input from sensors on the double-wishbone suspension as well as aircraft-style gyroscopes and accelerometers.

To tackle the challenge of wrestling more power from the Gallardo V-10 while remaining within emissions regulations, Lamborghini raised the compression ratio to 12.7:1 and conjured an elaborate fueling system that combined both direct and indirect injection technology. The Iniezione Diretta Stratificata common-rail direct injection system activated at various points of the rev spectrum to improve peak power and efficiency, while an indirect multi-port injection (MPI), romantically described by Maurizio Reggiani as "the master of ceremonies," presided over startup and the majority of the rev range. This was an innately costly solution, because direct injection demands highly resilient injectors (since they are mounted in the combustion chamber) and a sophisticated, high-pressure pumping mechanism; and the mapping software required to harmonize two separate injection systems is an act in itself. But it would be worth it to combine the strengths and eliminate the weaknesses of the different injection methods; direct injection's more precise metering gives better economy, and the denser charge more power, but the different fuel-air mixture characteristics encourage carbon particulates to form. To run direct injection alone would mean the engine wouldn't pass the stringent Euro 6 emissions test without a particulate filter at the very least, which would have been counterproductive. In production trim, the peak power output was measured as 602 brake horsepower at 8250 rpm.

Like the transmission, the engine management was adjustable from the cockpit via a system Lamborghini called ANIMA—both the Italian word for "soul" and a slightly labored acronym (standing for Adaptive Network Intelligent Management). Its three modes—Strada, Sport, and Corsa—gave a progressively more track-focused feel to the power curve, shift speed, stability control settings, damper response, and even the tiller if the optional Lamborghini Dynamic Steering was present.

Each Huracán is suspended from a cradle as it passes along the assembly line and approaches completion; this helps to shield it from damage. ***Automobili Lamborghini***

To ensure consistency and customer satisfaction, every Huracán is performance tested on a rolling road before it leaves the factory. ***Automobili Lamborghini***

The latter technology, a carryover from Audi, would prove to be a controversial addition. Dynamic Steering uses aerospace-derived technology to vary the steering ratio and powered assistance according to speed. Rather than a conventional rack, the steering column feeds in to a "harmonic drive" in which an electrically driven elliptical inner rotor alters the shape of a sunwheel attached to the input shaft. This acts on another ring gear fixed to the output shaft, with the relative movement altering the effective steering ratio.

This system gives light steering with fewer turns from lock to lock at parking speeds, while adding more weight and becoming less direct on the open road, thereby reducing the tendency to fidget that a linear-rack car might display. It's light and compact and requires little power, and promises a subtle level of "intervention" when the stability control systems detect a slide. But in practice Dynamic steering is not to all tastes, and many drivers—this author included—dislike the strangely elastic feel it transmits as you turn the wheel, even though the actions of the system are claimed to be "virtually imperceptible."

To give customers a choice, adaptive magnetorheological damping would be offered as an option, as on the forthcoming Audi R8 with which the Huracán would share platform and drivetrain. As the final phases of development got underway, one of the priorities for Lamborghini's engineers was to ensure that the two cars were noticeably different—and hopefully, with the pride of Sant'Agata at stake, the Huracán being the better of the two. One benchmark laid down from Ingolstadt was for it to hit 200 miles per hour at Nardo without becoming unstable. Early prototypes added to chief test driver Giorgio Sanna's sum of gray hairs but, as Reggiani would later attest proudly, when the Audi bigwigs arrived for the final sign-off, the final prototype Huracán hit all its high-speed marks—and did so without requiring a pop-up rear spoiler such as those seen on McLaren's 12C and (perhaps more significantly) the Audi R8 and TT. The final shape also produced 3 percent less drag than the already clean Gallardo.

Getting to that point required substantial wind tunnel work, smoothing out some of the more outré details of the original proposals. Still, Perini pronounced himself happy: "We have a solid body with really strong elements, clean surfaces, and precise lines. The design proposal was tested from the beginning to have the perfect performance in driving and downforce. It's very interesting how the design of this car can be extreme and usable.

"We have tried to hide all the openings that are necessary for the cooling system, and for aerodynamic performance, in a carefully shaped and clean volume. There are hexagonal designs around the side opening; it's a feature that we like, a DNA that is arriving from the Aventador. We love to work with this kind of geometrical line."

Twenty-first-century quality control on the Huracán assembly line: a high-accuracy coordinate measuring machine checks for precise fit and finish. ***Automobili Lamborghini***


EW 002EZ

Hexagonal shapes predominated on the finished Huracán, starting with the front air intakes. Here Perini left the shapes open, with the lower inner legs halting before they met the nose. A pair of creases on the hood, starting at the bottom corners of the windscreen and tracking inwards, also flattened out before they met the tip of the nose. Taken as a whole with the angular headlamps that enclose Y-shaped white LEDs, the effect was like the toothy maw of the titular creature in the movie Predator. The hexagonal theme continued in the graphic of the side windows, with the angles reflected in the two air intakes on each flank, rounded off with a honeycomb-style panel between the Aventador-style rear lights. Twenty-inch wheels properly filled the arches and gave an aggressive, ready-to-pounce stance.

The Huracán's launch process began with a teaser website called the Hexagon Project, which went live in November 2013. Tellingly, this offered no images of the forthcoming car, nor did it suggest what it would be called. Visitors could listen to a recording of the new V-10 and log their email address for more updates, and that was it. As a data-capture exercise and anticipation builder, it could not have been more effective; pity the poor marketing executives who had to trawl through the many thousands of contact details to sort the bona fide sales leads from the excitable teenagers.

Studio photographs of the finished car were released to selected media the following month, along with confirmation of the car's name, previously rumored to be Cabrera. The big moment would be the unveiling at the Geneva show, superintended by company president Stephan Winkelmann. "This," he told attendees, "is a new chapter."

Lamborghini had taken more than 1,000 orders for the car ahead of its launch, but the reaction to the new shape was not uniformly positive. McLaren F1 designer—and sometime Lamborghini engineering consultant—Peter Stevens used social media as his pulpit to declaim it:

> The suggestion is that the majority of the design work was carried out using CAD, something of a new direction for Lamborghini. It is often very difficult to bring passion into a design when using computer platforms and it is very easy to lose control of the surfaces. What does "losing control of the surfaces" mean? The Huracán has plenty of areas that demonstrate this. For example, ahead of and above the rear wheel opening, and similarly above and behind the front wheel opening, the quality of the surface reflections is so different from other parts of the car that they look to have been the work of a different designer.
>
> Twisted planes are never easy to resolve, the reflections just don't do what one wants them to do. The way that the thin little line coming off the rear spoiler lip tries to disappear before it hits the rear wheel arch is very poor design. Edges do not want to just disappear into a surface. The front of the car has a strange "face" that looks both busy and miserable from any angle, and worst of all it's very hard to read the forms on the roof which seems to be a chaotic mess of lines. The fact that almost all of the official images of the car are studio shots where the light and reflected backgrounds are totally under the control of the photographer suggests that someone knows it's not too good a piece of work. And most of the images and road test cars are in either satin white or satin black. These are colors that hide the poor surface development of the Huracán.

Since most car nuts, including those opening their wallets for a new Huracán, begged to differ, Lamborghini could afford to let this kind of criticism pass. Its executives were probably more concerned about activities within the Volkswagen Group tent: Dr. Hackenberg manifested himself frequently during the press launch activities like a Dickensian specter, availing himself of every opportunity to remind the audience of how much Audi DNA lay under the skin—not, one presumes, the body, detail, or tenor of the message Lamborghini wanted to transmit.


Lamborghini
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At such events there is only so much jaw-jaw the average motoring writer can take before they want to grab the keys and run, and the Huracán launch was no exception. For all the talk of DNA, Audi or otherwise, the key questions had to be laid down on the road: what was the Huracán experience like?

The car's brooding presence—even in some of the more electric shades of orange and green—lent a sense of occasion even before drivers climbed aboard and sampled the smartly trimmed interior, which was equally captivating in its details. Toggle switches abounded, as in an aircraft, and the central console was dominated by a hexagonal enclosure in which a red flip-up switch covered the start button. Pure theater, as was the multi-adjustable TFT instrument cluster. Arranged around the flat-bottomed steering wheel and its ANIMA switch were a pair of outsized, curved gear shift paddles; this was a bull the driver really did have to take by the horns.

"Flick up the red guard," wrote Richard Meaden in *Evo* magazine, "press the black button and from the moment the 5.2-liter, 602bhp V10's combustion chambers ignite—cylinder 1 followed by 6, 5, 10, 2, 7, 3, 8, 4 and 9, in case you were wondering—you're sitting in the midst of a sensory maelstrom. The noise is gritty, textural, almost caustic in quality. It's not mellow or musical, but not industrial either. It sounds organic, respiratory and exultant. It sounds like a supercar should."

Most drivers agreed that the Huracán was a thoroughly different beast than the Gallardo, less of a handful *in extremis* and more finessed and sophisticated in the moment-by-moment nuances of everyday driving. Less so the Dynamic Steering, which, at the time of writing, thankfully remains an option.

Sampling a Huracán for the first time at Portugal's Ascari circuit, experienced hand Georg Kacher wrote in *Car* magazine:

> Although this Lamborghini can bark louder than most of the rivalling big dogs, its personality is much more mature and less aggressive than the Gallardo. One case in point concerns the new Lamborghini Doppia Frizione dual-clutch gearbox which bites faster and harder than the rather rough automated manual fitted to the Gallardo, yet at the same time can be totally fluent, seamless and relaxed. But dictating the pace with your fingertips is still the most rewarding modus operandi. Revs permitting, the transmission will change down several gears at a time while you keep the paddle pulled.
>
> In Corsa mode, the steering action speeds up dramatically, tip-in is an object lesson in preemptive obedience, upshifts are accompanied by a whiplash domino effect, torque vectoring clearly favors the rear wheels, and the shock absorbers keep the body almost level even under hard braking and through maximum-g corners. Initially, stability control provides exactly that and a bit too much of it, but after about 20 laps when the tires start to melt and the car fishtails out of second- and third-gear bends, the calibration feels suddenly spot-on. By that point, the carbon-ceramic brakes are hot enough to decelerate our gleaming citrus fruit on wheels with such time warp efficiency that it seemed perfectly okay to hit the pedal eerily late, even though extreme deceleration would occasionally trigger an initial wobble or two.
>
> Not only a sharper and faster driving machine, but also a more compliant and accessible sports car. Even more so than the Aventador, it is two cars in one.

Automobili Lamborghini

As Winkelmann said, Lamborghini had begun a new chapter. But it was one with a definite conclusion. The Huracán is the most accomplished car Lamborghini has ever made; however, with ever-tighter emissions controls looming, it may be among the last to feature a naturally aspirated engine. A break with the historical tradition established by Ferruccio Lamborghini will surely come one day. Even so, if this car proves to be a chapter in itself, its technical achievement merits that status in Lamborghini history.

ASTERION

With the Huracán, Lamborghini was careful to remain true to its heritage of basing its product around a muscular, naturally aspirated engine. Obviously, though, in a changing world where oil grows ever more scarce and even performance car manufacturers are having to find major efficiency gains, you can only push so far in the direction of weight savings.

The Asterion, unveiled at the 2014 Paris Motor Show, was a glimpse of what a hybrid-powered Lamborghini might look like. Company president Stephan Winkelmann described it as a "technology demonstrator" and, scrupulously establishing clear water between the Asterion and recently introduced supercars such as McLaren's P1 and Porsche's 919, said it was "conceived more for comfortable luxury daily cruising than for ultimate track performance."

Certainly the shape, sculpted by Filippo Perini's team at Lamborghini Centro Stile, gently alluded to daily drivers from Sant'Agata's past, such as the Espada of the 1960s as well as Gandini's show-stopping Marzal. Under the composite body, though, the chassis was a carbon fiber monocoque that had more in common with the Aventador than even the Huracán.

The 602-brake-horsepower V-10 internal combustion engine was sourced from the Huracán and supplemented by three brushless electric motors, one located within the gearbox and operating on the rear wheels, while two more lived ahead of the occupants and acted on the front wheels. At full discharge these motors were rated at 296 brake horsepower, taking the car's theoretical peak power to 898 brake horsepower. The seven-speed twin-clutch gearbox directed power to the rear wheels only, with the transmission tunnel that would be occupied by the four-wheel-drive hardware in other Lambos used to house a lithium ion battery for the electrical hardware. Feather-footed drivers could accomplish in the region of 67 miles per hour, and the Asterion's CO_2 emissions were rated at 98 grams/kilometer, which compared favorably with the Aventador's 370 grams/kilometer.

The driver could choose between three modes, one of which used electrical power only and drove via the front wheels, with an estimated range of 31 miles and a maximum speed of 78 miles per hour. With all the power sources deployed, the Asterion was claimed to complete the 0–62 miles per hour benchmark in 3.0 seconds and top out at 199 miles per hour. Lamborghini did not release official weight figures for the complete car but claimed that the electric motors and battery pack amounted to a respectable 250 kilograms.

"The hybrid system is based around existing technology and we have to accept that it comes with a weight penalty," said Winkelmann. "If we want to keep the brand alive, we have to progress into new areas. Legislation is forcing us to look at cleaner driveline solutions, and we've packaged our answer in a car that stylistically recalls some of our classic GT models.

"Some time in the future, we will be forced to adopt turbocharged engines, but for now we will stick to naturally aspirated engines."

Automobili Lamborghini


Lamborghini

SPECIFICATIONS

Huracán LP610-4	
Chassis	Aluminum/carbon fiber spaceframe
Suspension	Independent double wishbones front/rear, coaxial coil springs, telescopic self-adjusting shock absorbers, anti-roll bars, and anti-squat bars
Brakes	Ventilated Brembo discs with ABS, ASR, and ABD
Wheelbase	2620 mm
Front/rear track	1668 mm/1620 mm
Wheels/Tires	20 in × 8.5 in, Pirelli PZero 245/30 (front); 20 in × 11 in, Pirelli PZero 305/30 (rear)
Engine	Rear longitudinal-mounted 90-degree V-10
Bore/Stroke	84.5 mm/92.8 mm
Cubic capacity	5204 cc
Compression ratio	12.7:1
Maximum power	602 bhp at 8250 rpm
Valve gear	Dual overhead camshafts, chain drive, 4 valves per cylinder, continuously variable timing
Fuel/ignition system	Bosch MED engine management with direct and indirect injection systems
Lubrication	Dry sump
Gearbox	7-speed LDF dual-clutch
Transmission	Four-wheel drive with electrohydraulic multi-plate clutch
Dry weight	1422 kg
Top speed	202 mph

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