

# 2007 Mercedes-Benz GL-Class

Product Information For News Media

**Mercedes-Benz USA**  
Product and Technology PR Dept.

**AUTO SPIES** March 2006



## The New Mercedes-Benz GL-Class

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For Release:

March 6, 2006

## **MERCEDES-BENZ LAUNCHES ALL-NEW GL-CLASS SUV Seven-Seat GL Represents First Large SUV for Mercedes-Benz**

NAPA VALLEY, CA – Mercedes-Benz is rolling out the new GL-Class this week, and journalists are getting their first opportunity to test-drive the new SUV. Already offering the broadest and most diverse product portfolio in the automotive industry, Mercedes-Benz is launching its first large sport-utility vehicle. The highly successful auto company is poised to enter yet another market with the all-new GL-Class, a seven-seat luxury sport-utility that is being produced in the company's Alabama plant along with the M-Class and R-Class.

It's no coincidence that the new GL model designation echoes the already legendary Mercedes-Benz G-Class sport-utility. While the GL-Class SUV is built on an entirely new platform, the venerable G-Class is entering its 26<sup>th</sup> year of production and will continue to be marketed beside the new GL.

### **Mercedes-Benz Safety in a Premium SUV**

The graceful body of the new GL-Class is 200 inches in length, 75.6 inches wide and 72.4 inches tall, boasting an aerodynamic drag coefficient of 0.37. Its steel unit body provides outstanding passive safety with a high-strength occupant cell protected by technologically advanced front and rear crumple zones that include new provisions to help reduce potential injuries to pedestrians and cyclists. The GL comes with two-stage front air bags for the driver and front passenger, side air bags in the front and 2<sup>nd</sup>-row seats, and curtain air bags that span all three rows of seats.

The new GL-Class arrives in the U.S. market with a 4.6-liter, four-valve-per-cylinder V8 engine producing 335-horsepower, a seven-speed automatic transmission and 4MATIC full-time four-wheel drive.



The GL comes with four-wheel independent suspension, speed-sensitive power steering, height-adjustable Airmatic springing with ADS adaptive damping and 18-inch 265 / 60 all-season tires. The vehicle has a 7,500- pound Class V towing capacity.

Inside, the GL is fitted with real burl walnut wood trim, power front seats and a glass sunroof with a fixed glass panel over the third-row seats. The two third-row seats can be stowed electrically at the push of a button, either separately or together, to provide a totally flat cargo floor. As a five-seater, the GL can carry 43.8 cubic feet of cargo, and with the second row seats stowed as well, there's more than 83 cubic feet of cargo room.

In addition to the widely acclaimed Mercedes-Benz 4MATIC system, standard features such as DSR downhill speed regulation, hill-start assist, and a special off-road ABS algorithm can help drivers during off-road excursions. An optional Off-Road Pro package includes a two-speed transfer case and locks for the center and rear differentials. The package also includes modified air suspension that can raise ground clearance to 12 inches, which raises its low-speed fording depth to more than 23 inches.

## **The Mercedes-Benz Alabama Plant**

The Mercedes-Benz plant in Tuscaloosa, Alabama began production in 1997 with the first-generation M-Class, and about \$600 million has been invested since 2001 to expand the facility. At its completion in May 2005, the plant's annual production capacity stands at 160,000 vehicles, with a total investment of around \$1 billion. Joining the M-Class and R-Class, the GL-Class is the third model line to be built in Tuscaloosa.

## **About Mercedes-Benz USA**

Mercedes-Benz USA (MBUSA), headquartered in Montvale, New Jersey, is responsible for the sales, marketing and service of all Mercedes-Benz and Maybach products in the United States. In 2005, MBUSA achieved an all-time sales record of 224,421 new vehicles, setting the highest sales volume ever in its history and achieving 12 consecutive years of sales growth. More information on MBUSA and its products can be found on the Internet at [www.mbusa.com](http://www.mbusa.com) and [www.maybachusa.com](http://www.maybachusa.com).



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## BACKGROUND

### The SUV Market

Although the sport-utility vehicle can trace its roots back to the 1940s, it was the introduction of so-called “compact” four-door SUVs in the early 1980s that ignited the immense popularity of these vehicles across diverse demographic and psychographic lines.

The sport-utility vehicle (SUV) segment has been one of the most rapidly growing parts of the overall automobile market in the United States.

In particular, the premium segment, defined as SUVs priced over \$28,000, has experienced considerable growth. Within this sub-segment are luxury versions of lower-priced SUVs, as well as specific luxury-brand SUVs, some of which are modified and rebadged versions of other vehicles. As the luxury SUV market has expanded, it evolved to include large SUVs such as the new GL-Class.

SUVs are popular with singles, with couples, with families and with empty-nesters. Many factors contribute to the popularity of SUVs, including versatility for passengers and cargo, four-wheel drive capability for inclement weather driving and/or off-road travel, and, not insignificantly, an outward image that conveys an active, outdoors-oriented lifestyle. This image has become an important buying consideration, and is likely to continue playing a major role in purchase decisions of these vehicles.

### Mercedes-Benz Started an Industry Trend

The original M-Class set new standards in 1997 by combining the safety and comfort of a Mercedes-Benz with the versatility and off-road capability of an SUV. As a result, Mercedes-Benz launched a trend toward more car-like SUVs. Unusual at the time for an SUV, the first M-Class featured front and rear independent double wishbone suspension. From a technical stand-point, the original M-Class featured an entirely new four-wheel-drive system, combining full-time drive to all four wheels with four-wheel traction control, which required no driver intervention and provided responsive handling and steering.

The second-generation M-Class launched in 2005 re-asserted its leadership in the sport utility market and set the stage for the launch of the R-Class grand sports tourer and now the GL-Class large sport utility.

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# INTRODUCTION

## **A Four-Wheel-Drive Foursome Emerges**

Mercedes-Benz has decades of experience developing and marketing outstanding four-wheel-drive vehicles, among them the legendary Unimog commercial vehicle and the venerable G-Class sport utility. Together with the current M-Class mid-size SUV, the new R-Class grand sports tourer and the G-Class, the new GL-Class forms a family of four-wheel-drive vehicles that can get rough when they need to, but have all the comfort and style of fine luxury sedans.

## **The First Large SUV for Mercedes-Benz**

Mercedes-Benz is poised to enter yet another market with the all-new GL-Class, a seven-seat luxury sport-utility vehicle that will be produced in the company's Alabama plant along with the M-Class and R-Class. Already offering the broadest and most diverse product portfolio in the automotive industry, Mercedes-Benz is launching its first full-size luxury sport-utility. As such, the new GL-Class will compete with vehicles such as the Cadillac Escalade and Lincoln Navigator.

It's no coincidence that the new GL model designation echoes the venerable Mercedes-Benz G-Class SUV. While the GL-Class sport-utility is built on an entirely new platform, the still-popular G-Class is entering its 26<sup>th</sup> year of production and will continue to be marketed beside the new GL. The new GL-Class is scheduled to go on sale in the U.S. during the spring of 2006 and in Europe later that year.

## **Mercedes-Benz Safety in a Premium SUV**

Boasting an aerodynamic drag coefficient of 0.37, the graceful body of the new GL-Class is 200 inches in length, 75.6 inches wide and 72.4 inches tall, making it the largest Mercedes-Benz passenger vehicle in terms of overall size. Its steel unit body provides outstanding passive safety with a high-strength occupant cell protected by technologically advanced front and rear crumple zones that include new provisions to help reduce potential injuries to pedestrians and cyclists.

The GL comes with two-stage front air bags for the driver and front passenger, side air bags in the front and second-row seats, and curtain air bags that span all three rows.

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Active front head restraints are standard on the new GL-Class. In the event of a rear collision exceeding the system's deployment threshold, the front head restraints move forward more than 1¾ inches (44 mm) and upward by more than an inch (30 mm), helping to support the head and reduce the likelihood of whiplash injuries.

## **Under the Hood**

The new GL-Class will debut in the U.S. market with a 4.6-liter four-valve-per-cylinder V8 engine producing 335-horsepower, a seven-speed automatic transmission, 4MATIC full-time four-wheel drive and Airmatic air suspension. The GL also comes with four-wheel independent suspension, speed-sensitive power steering and 18-inch 265/60 all-season tires. The vehicle has a 7,500-pound Class IV towing capacity.

Inside, the GL is fitted with real wood trim, power front seats and a tilt-sliding glass sunroof with a fixed glass panel over the third-row seats. Not only does the new GL have space and comfort for seven occupants, but also the two third-row seats can be stowed at the push of a button, either separately or together, to provide a totally flat cargo floor.

In addition to the widely acclaimed Mercedes-Benz 4MATIC system, standard features such as DSR downhill speed regulation, hill-start assist, and a special off-road ABS algorithm will help drivers during off-road excursions.

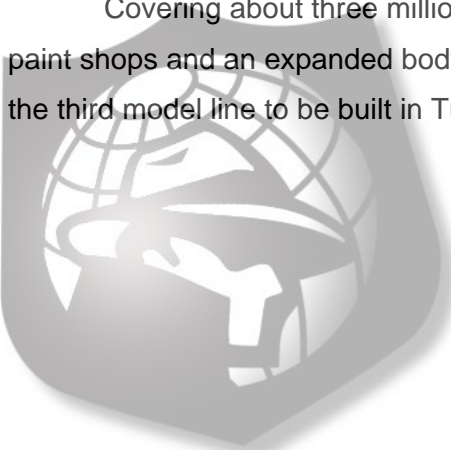
An optional Off-Road Pro package will include a two-speed transfer case and locks for the center and rear differentials. The Airmatic air suspension is modified with ADS adaptive damping that can increase ground clearance to 12 inches, which also raises its low-speed fording depth to more than 23 inches.

## **The Mercedes-Benz Alabama Plant**

While Mercedes cars were manufactured briefly in the United States from 1905-1907 under license by the Steinway Piano Company, the production site in Tuscaloosa, Alabama was the first real passenger vehicle production facility in the United States for Mercedes-Benz. The plant began production in 1997 with the first-generation M-Class, and about \$600 million has been invested since 2001 to expand the facility. At its completion in May 2005, the plant's annual production capacity stands at 160,000 vehicles, with a total investment of around \$1 billion.

Covering about three million square feet, the plant includes two assembly shops, two paint shops and an expanded body shop. Joining the M-Class and R-Class, the GL-Class is the third model line to be built in Tuscaloosa.

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# EXTERIOR DESIGN

## Strong Shoulders

The design of the all-new GL-Class is bold and, at the same time, sophisticated. Exterior styling is characterized by a strong chin line and uninterrupted shoulder line, complemented by widely flared wheel arches and a sharply angled windshield. Bracketed by triangular headlights, the front grill features two horizontal chrome bars holding the Mercedes-Benz star logo. Two power domes run the length of the front hood, which sits above the front fenders, with beefy lines that visually connect the grill to the front roof pillars.

Privacy glass covers the B and C roof pillars, creating the illusion of a single glass panel along the entire side of the vehicle. An accent crease along the belt line also helps to unify the side shape and gives it a sense of motion, even standing still. Viewed from the rear, a squared-off bumper and D-pillars emphasize the height of the vehicle, while its wide track and flared rear wheel wells continue a muscular design theme. The well-balanced proportions of the rear glass, tailgate and rear bumper complete the picture.

## Projector Beams Light the Way

Front-end styling is accentuated by high-technology halogen projector-beam headlights, comprised of three individual chrome tubes. An optional Bi-Xenon package includes swiveling headlights and Turn Assist fog lights for enhanced visibility.

The optional high-intensity xenon gas-discharge headlights provide superlative lighting, and they swivel to follow the driver's steering input, pivoting rapidly to the relevant side when the car enters a bend, and improving road illumination by up to 90 percent over fixed halogen lights. When the driver activates a turn signal or turns the steering wheel, the Turn Assist fog lights also illuminate areas of the road which would remain dark with conventional lighting systems – areas that could include a pedestrian or cyclist.

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# INTERIOR DESIGN

## Rich, Sporty, Attention to Detail

The interior of the new GL-Class features high-quality materials finished with craftsman-like attention to detail. Once inside, the driver is greeted by a four-spoke multifunction steering wheel with brushed aluminum accents on the lower spokes. An electronic shift lever mounted on the steering column allows for clean, dramatic lines along the center console area between the seats.

A sport-oriented instrument panel is horizontally divided into an upper and lower section in both form and color. Four round circular vents are positioned at the left, center and right sections of the sweeping dash, their chrome surrounds reminiscent of jet aircraft. A leather-covered upper dashboard arches over the instrument cluster, which is dominated by angled tubular gauge binnacles containing the speedometer, tachometer, temp and fuel gauges as well as a clock.

## Comfortable, User-Friendly Space

A clearly arranged center console features easily accessible and well-positioned ergonomic controls and displays. Located just below the two central air vents are the COMAND system and Thermatic dual-zone climate control. A six-disc CD changer (mounted in the glove box) is standard, and the COMAND unit incorporates a single CD slot and auxiliary input for MP3 players. Audiophiles will appreciate an optional 11-speaker harmon/kardon™ Logic 7® surround-sound audio system.

## Equal Parts Form and Function

The center console extends gracefully into the center transmission tunnel, which includes two large cupholders with the ability to store two 32-oz. or one 44-oz. cup(s). Two horizontal grab handles on the console echo the sweeping lines of the exterior and provide a firm gripping point for those occasional ventures on rough roads. The two-tone color scheme of the interior is repeated on the center console, transmission tunnel and door panels, accented by wood or aluminum trim.

The seven-passenger interior includes electrically-adjustable front seats with a memory feature, a 1/3-2/3 split fold-down second-row seat and two individual third-row seats that can be electrically stowed at the push of a button to provide a flat cargo floor.

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With the third-row seats stowed, the GL can carry 43.8 cubic feet of cargo, and with the second-row seats stowed, there's more than 83 cubic feet of cargo room. To accommodate many combinations of bulky cargo and passengers, either section of the divided second-row seat can be folded down separately to create a flat surface level with the rear cargo floor.

## **Roomy Comfort**

The advanced unit body design of the new GL-Class has made possible a roomy interior and, at the same time, a comfortable ride. Intelligent interior design allows up to seven occupants to travel in first-class comfort, whether it's a long trip or a run to the corner store. There's good room in the third seat row, with 34.2 inches between the front and 2<sup>nd</sup>-row seats and 32 inches between the 2<sup>nd</sup>- and 3<sup>rd</sup>-row seats.

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# ENGINE

## New-Generation V8 Engine

The launch of the 2007 GL-Class marks the debut of a second version of the new-generation V8 engine family from Mercedes-Benz, one that's characterized by double overhead camshafts in each cylinder bank and variable valve timing for both the intake and exhaust valves. The new engine also features intake "tumble flaps" for even better fuel economy and a two-stage intake manifold that broadens the power curve.

In the 1990s, Mercedes-Benz pioneered advanced engine technologies that featured three valves per cylinder, in which a single exhaust valve kept exhaust temperature high and emissions low. In the ensuing years, Mercedes engineers have developed new ways to minimize emissions, allowing them to utilize higher-flow four-valve architecture for the new engine family.

## More Power, Same Fuel Economy

One of the most powerful engines for its size, the 4.6-liter aluminum V8 produces 335 horsepower and 339 foot-pounds of torque. This power curve makes the GL-Class surprisingly responsive over a broad RPM range, with zero-to-60-mph acceleration of about 7.4 seconds (estimated) as well as a 7,500-pound towing capacity.

The new-generation V8 engine family, known internally as the M273, makes use of the latest advances in lightweight design, with an aluminum block and cylinder heads as well as low-friction silicon-aluminum cylinder liners. In addition to internal exhaust gas recirculation and secondary air injection, the new engine uses two close-coupled catalytic converters with linear oxygen sensors to ensure low exhaust emissions.

## Variable Intake and Exhaust Valve Timing

Valve timing on the new V8 is automatically adjusted within a range of 40 degrees using electro-hydraulic vane-type adjusters on the end of each camshaft. At part throttle, the valve timing adjuster keeps the exhaust valves open as the intake valves are opening, using this valve overlap for internal exhaust gas recirculation, reducing exhaust emissions and improving fuel economy. However, approaching full throttle, the camshaft adjustment optimizes valve timing for maximum power.

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## **Tumble Flaps Improve Fuel Efficiency**

The V8 engine is equipped with tumble flaps in the intake passages near the combustion chamber. The tumble flaps pivot open under part load, improving combustion by creating additional turbulence around the intake valve and in the combustion chamber.

During higher engine loads such as full throttle, the tumble flaps are completely recessed in the wall of the intake manifold. While better combustion helps improve engine torque, the primary purpose of the tumble flaps is to further optimize fuel economy.

## **Two-Stage Intake Manifold Fattens the Torque Curve**

While variable valve timing gets a lot of credit for the engine's unusually broad torque curve, a two-stage magnesium intake manifold plays a key role as well. At relatively low engine speeds, a set of flaps in the manifold close off short intake passages, forcing intake air to take a much longer route into the engine. This creates pressure waves that help the intake process and improve torque at lower engine speeds. Above about 3,500 rpm, the flaps open and air flows the shortest distance to the combustion chambers, helping to boost power, especially at higher speeds.

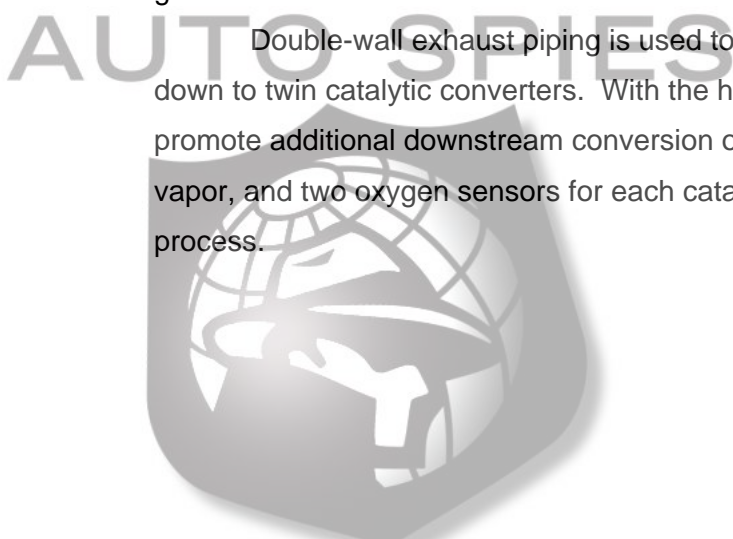
## **Assembling the New V8 from Start to Finish**

First, a forged crankshaft with five wide main bearings is placed into the aluminum engine block that features transverse bearing supports to minimize vibration. The engine block is cast around Silitek cylinder liners that provide a long-life, low-friction silicon-aluminum running surface for the piston rings. In addition, the block is nearly seven pounds lighter than if it was fitted with conventional cylinder sleeves.

Aluminum pistons are pinned onto forged steel connecting rods that are about 20 percent lighter than other comparable engines. The pistons slide into the cylinders, and the connecting rods are clamped around the crankshaft journals.

The two cylinder heads are bolted onto the block, and twin camshafts are installed in each head. The intake cams are driven by a double chain from the crankshaft, and small gears on both cams in turn drive the exhaust cams.

Double-wall exhaust piping is used to keep the exhaust air as hot as possible leading down to twin catalytic converters. With the help of secondary air injection, the catalysts promote additional downstream conversion of pollutants into carbon dioxide and water vapor, and two oxygen sensors for each catalyst monitor and help manage the entire process.



# TRANSMISSION

## The Seven-Speed Automatic

The new GL-Class comes with the exclusive Mercedes-Benz seven-speed automatic transmission. When compared to the previous transmission generation, the seven-speed provides better acceleration and fuel economy while providing smoother gearshifts.

Seven gear ratios provide a wider spread of ratios between first gear and top gear and, at the same time, allow smaller increases in engine speed as the car accelerates through the gears. This gives the electronic control unit more flexibility in terms of maximizing fuel economy and making the transmission's reaction time extremely fast.

## Skip a Gear When You Need To

Unlike most transmissions, the seven-speed transmission will skip up to three gear ratios if necessary when it downshifts, shifting directly from seventh to fifth, for example, or even sixth to second. This helps the transmission choose the right gear ratio for quick acceleration, with smooth, almost imperceptible shifts in the process.

## Lock It Up for Better Fuel Mileage

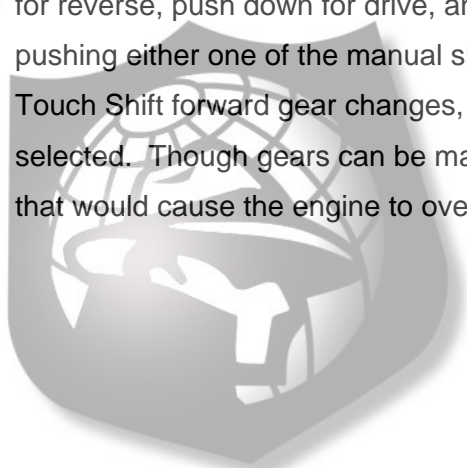
The new Mercedes-Benz seven-speed uses a refined, proven hydrodynamic torque converter with a special lock-up clutch inside the converter for maximum fuel efficiency.

Submerged in transmission oil and using special long-life friction materials, the lockup clutch eliminates the usual torque converter "slippage," providing the direct connection and fuel efficiency of a manual transmission when the lockup clutch is engaged. The Mercedes-Benz lock-up clutch engages in all seven gears.

## Touch Shift – Just Like It Says

Unlike most vehicles, the look of the center console of the new GL-Class is not dominated by a shift lever. Thanks to the latest electronic control technology, a small stalk on the right side of the steering column now serves the purpose.

Direct Select shift control makes gear selection simpler than ever. Lift the stalk up for reverse, push down for drive, and push a button on the end for park. Once underway, pushing either one of the manual shift buttons on the "back" of the steering wheel provides Touch Shift forward gear changes, and an in-dash gear indicator shows what gear is selected. Though gears can be manually selected, computer control prevents downshifts that would cause the engine to overrev.



# FULL-TIME FOUR-WHEEL DRIVE

## Front, Center and Rear Differentials

The GL-Class uses three conventional differentials in the front, rear and center of its full-time four-wheel-drive powertrain. The center differential allows the front wheels to go faster than the rear when turning, while the front and rear diffs permit the outside wheels to go faster than the inside ones in turns.

The Mercedes-Benz GL-Class stands apart from many other four-wheel-drive SUVs by using a four-wheel adaptation of the company's proven electronic traction control (4-ETS) to maintain stability and traction on wet or snowy roads. Referred to as 4MATIC, this system senses wheel slip electronically and brakes the slipping wheels, which transfers the right amount of torque to those tires with the most grip.

Unlike many conventional four-wheel-drive systems, 4MATIC automatically provides mobility even when three wheels lose traction. The center differential is located in a one-speed transfer case, along with a link chain which turns a prop shaft to the front differential. In vehicles equipped with the optional Off-Road package, a planetary unit in the two-speed transfer case provides two selectable gear ranges – 1:1 for on-road use and a 2.93:1 low-range gear reduction for off-road travel.

Under ideal road and driving conditions, torque distribution is 50-50 front-to-rear, so the driver experiences the benefits of full-time four-wheel-drive. When road conditions turn slippery, 4MATIC can vary torque transfer front-to-rear and side-to-side to be directed to the wheels with traction.

## Off-Road Mode

Standard equipment on all GL-Class vehicles, an Off-Road Program button on the center console adjusts the following systems for optimal off-road performance:

- **ABS:** The on-off cycling of the anti-lock brake system keeps the brakes engaged more of the time, which briefly locks the wheels, allowing them to dig in and stop more quickly on loose surfaces. Available at speeds below 20 mph, the Off-Road mode shortens braking distances noticeably.
- **Traction control:** Not unlike the off-road ABS mode, slightly more wheel slip improves traction in gravel or sand.

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- **Transmission:** Shift points are raised so the GL stays in the relevant gear longer.
- **Accelerator:** The electronic throttle valve opens more slowly when the accelerator pedal is depressed, allowing vehicle speed to be controlled more precisely.

## Differential Locks

Along with the two-speed transfer case, the Off-Road package also includes a rotary switch on the center console that can engage electronically controlled multi-disc locks on the center and rear differentials. The switch can also select an automatic mode that locks the center differential whenever it senses wheel slippage.

## DSR – Cruise Control for Steep Descents

Downhill Speed Regulation is essentially a low-speed cruise control system, which is especially helpful in off-road conditions. Activated by a button on the center console, the driver then uses the cruise control stalk to set the speed anywhere between 4 and 12 mph. The system uses throttle, transmission gearing and automatic braking to maintain speed, even on steeper descents. The speed can also be set by using the multi-function steering wheel and a menu in the central display.

## Hill-Start Assist

This new technology helps to keep the GL-Class from rolling backward on uphill grades for a few seconds after releasing the brake. If the slope is steep enough, a special inclination sensor tells the system to hold brake pressure for about a second when the driver switches from the brake to the gas pedal. The hill-start assist is also active on steeper descents, which is helpful in hilly off-road conditions.

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## **Low-Range Transfer Case for True Off-Road Capability**

An optional Off-Road package features a two-speed electronically controlled transfer case that gives the GL-Class true off-road capability. High range provides 1:1 on-road gearing, and selecting low range with a button on the dash engages a 2.93:1 ratio.

Shifting into low range on the fly is also possible, as long as vehicle speed is below 25 mph and the shift lever is in neutral. Shifting back into high range is possible at any speed below 45 mph. In low range, and first gear, the Mercedes GL-Class has one of the lowest “crawl speeds” in its market segment, giving it the ability to negotiate the most challenging terrain and steep descents. When in low range, the GL-Class uses a special shift program to provide smooth shifting in rugged off-road conditions.

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# BODY

## Unit Body Platform

Instead of a separate “ladder-type” frame and body shell like the existing G-Class, the new GL features a self-supporting unit body platform similar to the R-Class and M-Class. To handle the high load forces involved in off-road driving, the high-stress points between the suspension and body are extensively reinforced.

The unit-body design of the new GL-Class allowed its developers to provide more interior room, a smoother ride and better handling.

## D-Ring Design Has a Firm Grip on the Body

A continuous “D-ring” roof structure contributes to the body’s outstanding rigidity. Reminiscent of an aircraft fuselage bulkhead, this hoop-like connection from the floor, sidewalls and roof frame is also used to attach the rear tailgate.

## High-Strength and Very-High-Strength Alloy

While conventional steel continues to dominate the materials mix, the new GL-Class body uses high-strength steel to form 54 percent of its body panels.

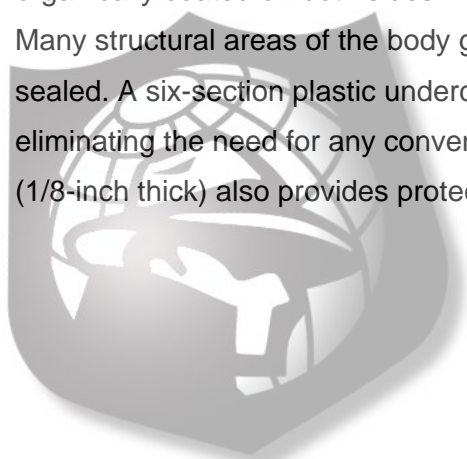
Some of these alloys, in particular “dual-phase” steel, even fall into the very high strength category. The two-phase microstructure of this alloy can withstand very high loads and, as a result, contributes to the strength of the front end and passenger cell.

## Low-Stress Welding

The flanges on many of its steel panels are designed so that any tolerances are already compensated for when the sheets are positioned, which allow them to be welded together without the usual metal stress. This technique also contributes to corrosion protection because it eliminates most of the extra brazed and MIG welding seams, which are vulnerable to corrosion.

## Fully Galvanized Body Panels

Speaking of corrosion, every body panel in the new GL-Class is zinc-galvanized and organically coated on both sides. The coating also contains rust-preventing zinc pigments. Many structural areas of the body get cavity protection, and welding seams are carefully sealed. A six-section plastic undercladding helps protect against stones water and dirt, eliminating the need for any conventional PVC undercoating. Thick wheel well cladding (1/8-inch thick) also provides protection against stones and gravel.



## **Nano-Particle Paint Protection**

An innovative clear-coat technology increases the scratch resistance of the paint. Standard on all GL-Class metallic and non-metallic colors, the process integrates ceramic particles measuring less than a millionth of a millimeter into the molecular structure of the paint, producing a more durable, glossier sheen.

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# SAFETY

## Crumple-Zone Body Design

The unibody platform of the new GL-Class gave safety engineers more flexibility to design the front-end structure. Two side members of high-strength steel (reinforced with inner steel liners), a front element and two more members at the wheel wells are the key energy-absorbing features of the new front end.

Two crash boxes of high-strength steel bolted to the side members are designed to absorb most of the impact energy in low-speed frontal collisions. As a result, the crash boxes and other bolt-on components can be replaced less expensively without welding.

At higher speeds, the side members form a key part of the crumple zone that absorbs more impact energy. In an offset frontal collision, an aluminum bulkhead and several other transverse members spread some of the forces across the entire front end. The side members above the wheel wells serve as a second level of energy absorption in over- or under-ride frontal collisions.

The high-strength steel subframe that carries the engine, transmission, steering and front suspension is also designed for controlled deformation in a severe frontal collision, and even the wheels play a role. Supported by strong side walls, the wheels help direct some of the forces away from the passenger cell.

## A High-Strength Passenger Cell

While the front and rear of the new GL-Class are designed to deform and absorb crash energy, the super-strong passenger cell protects its passengers by maintaining cabin space. The floor, roof pillars, side members and side walls frame this rigid safety zone.

The transmission tunnel is formed of thick steel and serves as the backbone of the floor structure. Transverse cross members connect to the tunnel and provide high lateral strength in a side impact, as well as providing a solid mounting point for the seats. In addition, diagonal members extend from the front bulkhead to the B-pillars to further strengthen the floor.

External side panels and multi-piece interior side panels help to form and strengthen the roof pillars, roof frame and side members. As an aside, sound-absorbing foam contributes to impressively low noise in the new GL-Class, and 34 such foam sections are incorporated just in the two side walls.



## **Rear Crumple Zones, Too**

The rear side members of the new GL are made of continuous closed box sections with tapered thickness for low weight and maximum strength in a collision. The fuel tank is located in a protected area in front of the rear wheels.

Like the front, the rear also features bolt-on steel crash boxes and an aluminum cross-member that both absorb impact energy in low-speed collisions and can be replaced in a relatively simple and less expensive procedure.

## **Seat Belts, Tensioners and Belt-Force Limiters**

The new GL-Class is fitted with three-point inertia-reel seat belts at all seating positions, as well as electronically controlled belt tensioners and belt-force limiters at all window seats. In a collision that exceeds the deployment threshold the tensioners take up slack on the seat belt to increase the effectiveness of the seat belt by allowing restraining contact between the belt and occupant earlier in the collision sequence. Later in the sequence, the belt force limiters can limit the peak restraining force of the seat belt against the occupant, reducing the risk of chest and shoulder injuries.

## **Two-Stage Front Air Bags and Belt-Force Limiters**

Two-stage front air bags for the driver and front passenger feature variable inflation rates, depending on the severity of impact. For example, if sensors detect a minor front-end impact of a severity that exceeds the first activation threshold for an average occupant, only one chamber of the gas generator is deployed. In a more serious collision that exceeds the second threshold, a second chamber is deployed 5 to 15 milliseconds later and provides additional inflation to increase the inflation rate of the air bag.

## **Two Levels of Side Impact Protection**

The new GL-Class is equipped with standard window curtain air bags – a system that can help protect all three rows of occupants on the impact side from hitting their heads on the side windows or roof pillars in a serious side collision.

In addition, the air-filled cushion can block glass splinters or some other objects that could cause injury in a side impact or rollover. More than 14 inches in height and about two inches thick when inflated, a curtain air bag on each side of the car extends over all the side windows and deploys in about 25 milliseconds from the ceiling.



Many severe and often fatal head injuries in side collisions are due either to objects intruding into the interior or contact with the window or side/roof pillars. Crash tests with the curtain air bag indicate a 90 percent reduction in the forces likely to cause head injuries.

The new GL-Class also comes with seat-mounted side impact air bags for the first and second row seats that protect the torso and work with the curtain air bags.

## **A Highly Advanced Sensor System**

A highly advanced sensor system gives the restraint system excellent reflexes. Two sensors in the nose of the GL-Class (on the radiator cross member) provide initial collision data, and can deploy the belt tensioners before the system can react to further crash data. These upfront sensors can also provide data to the system's central processing unit earlier in the collision sequence, helping it determine whether or not both stages of the front air bags should deploy and whether to adapt the belt force limiters.

Satellite sensors in the lateral cross members under the seats work together with the central crash sensor to determine deployment of the side air bags and window curtain air bags in the event of an actual collision that exceeds the deployment threshold.

The new GL-Class is also equipped with a rollover sensor, which can recognize this type of accident and relay the information to the restraint systems' central control. Depending on the nature of the rollover, the central control unit can activate all the belt tensioners and perhaps both window curtain air bags.

A sensor mat in the front passenger seat is used to determine the passenger's weight category, and the inflation rate of the air bag deployment is varied accordingly.

## **Mercedes-Benz Innovations Abound**

The new GL-Class chassis comes with a number of technologies that were pioneered by Mercedes-Benz and are now embraced by most of the auto industry:

- ABS anti-lock brakes for better directional control during braking, especially on slippery or uneven surfaces
- ESP stability control, which senses skids, then reacts in a split second to help restore control – government studies have proven that ESP can reduce single-vehicle accidents by up to 67 percent!
- Brake Assist, which ensures full-power braking in emergency stops

AUTO SPIES



# CHASSIS

## Four-Wheel Independent Suspension

The GL-Class features independent front and rear suspension. Many SUVs still have only independent front suspension, and some still use “solid” axles at the front and rear. Four-wheel independent suspension endows the GL-Class with class-leading handling, stability and ride comfort, both on and off-road, along with lower noise levels. Compared to rigid axles, independent suspension reduces unsprung weight by two-thirds, resulting in both better handling and ride quality.

## Double Wishbone Front Suspension

The GL-Class front suspension features double-wishbone upper and lower control arms. The upper arms are mounted very high in the chassis and are made of high-strength, light-weight forged aluminum alloy, which further reduces unsprung weight, while the lower control arms and steering knuckle are nodular cast iron. The front suspension uses air spring struts, gas shocks and large head bearings, and a stabilizer bar attaches to the lower control arms.

A front subframe is attached to the unibody by four large rubber bushings. The subframe carries the engine, transmission, rack and pinion steering gear and the lower control arms, while the upper control arms and shock/spring units are attached directly to the GL-Class body. The front differential is attached by three noise-insulating rubber mounts.

## Four-Link Rear Suspension

Similar to the front, the rear suspension is mounted to a subframe that is isolated from the body by two solid rubber bushings and two hydro-mounts that are filled with a liquid that helps to dampen vibration.

Mercedes engineers developed the four-link rear suspension consisting of the following parts:

1. Forged steel upper rods
2. Sheet steel camber arms
3. Cast iron lower wishbones
4. Tubular steel track rods

Shock absorbers are positioned behind the air springs, and a stabilizer bar completes the rear suspension.

AUTO SPIES



## **Speed-Sensitive Rack-And-Pinion Steering**

The Mercedes-Benz GL-Class employs a rack-and-pinion steering unit that's mounted ahead of the front wheel center. The hydraulically assisted steering has a variable ratio that operates more directly, or slightly faster, in the center position.

In addition, the new GL-Class steering has a standard speed-sensitive feature. An electronic valve ensures full power assist at low speeds for easy parking and low-speed turns, and the valve reduces the amount of power assist at higher speeds for improved road feel through the steering.

## **Serious Brakes**

The new GL450 is equipped with four-wheel vented disc brakes – 14-inch discs in front and 13-inch discs at the rear. In addition, double-piston brake calipers are used up front and single-piston calipers in back.

## **Wheels and Tires**

Wide, low-profile tires with a relatively wide track underscore the sporty nature of the new GL-Class. The GL450 comes with 18-inch 265 / 60 all-season tires, and 19-inch five-spoke wheels with 255 / 50 R 19 tires are optional. 20-inch wheels will also be available.

## **Height-Adjustable Air Suspension**

Developed by Mercedes-Benz, AIRMATIC air suspension not only improves GL-Class ride comfort, but also provides impressive flexibility by allowing for reduced ride height on the highway and increased ground clearance over rutted roads or deep snow and maintaining vehicle level when loaded.

Above 77 mph, the AIRMATIC system automatically lowers ride height more than ½ inch (15 mm) for improved handling and stability, as well as about 3 percent less air drag and, as a result, better fuel mileage. When speed falls below 25 mph, the suspension returns to normal height. On rough road, a rocker switch on the dash allows the driver to use the AIRMATIC system to raise vehicle height by more than three inches (80 mm), so that ground clearance is increased. The system automatically returns the vehicle to normal ride height at speeds above 25 mph.

AUTO SPIES





## Adaptive Damping System

The AIRMATIC air suspension includes an adaptive damping system that can actually change compression and rebound damping every 0.05 second in response to changing road conditions. If the system senses small body movements, it maintains a comfort mode with relatively soft damping.

With more body movement, the system uses solenoid valves in the shocks to cycle automatically between hard rebound and hard compression modes.

A rocker switch on the dash can lock the suspension into a “sport” mode – hard rebound and hard compression. The switch has three positions, which also allows it to lock in the comfort mode or maintain automatic operation. In summary:

- Stage 1 – the “comfort” setting, with soft compression and rebound damping
- Stage 2 – soft rebound and hard compression damping
- Stage 3 – hard rebound and soft compression damping
- Stage 4 – the “sport” setting, with hard rebound and compression damping

AIRMATIC features air bladders instead of coil springs. Gas shock/air spring struts are used in the front, and in the rear, gas shocks are located behind the air springs.

# AUTO SPIES





# OPTION HIGHLIGHTS

## **Distronic Cruise Control**

Optional DISTRONIC adaptive cruise control helps automatically maintain a preset distance behind a moving vehicle in front with the help of a radar sensor. In addition to varying accelerator pedal position like conventional cruise control, DISTRONIC can also apply partial braking automatically if needed (up to 20 percent of maximum braking force), to maintain the desired following distance.

The system is activated just like the standard conventional cruise control, by tipping the stalk above the turn signal. By using the menu button on the multifunction steering wheel, the driver can choose to monitor a DISTRONIC pictogram within the speedometer that dramatically shows the relative proximity of the car in front.

A thumbwheel on the center console can adjust following distance to the vehicle ahead – by scrolling the thumbwheel forward, the driver reduces the following distance, and by scrolling rearward, increases it.

## **Rear Seat Entertainment System**

An optional dual-source factory system with dual seven-inch screens is available with a DVD drive mounted under the 2<sup>nd</sup> seat row. This system incorporates three auxiliary plug inputs, and combined with the two 12-volt outlets in the 2<sup>nd</sup> row, allows occupants to use other audio/visual equipment to supplement the DVD player (i.e. game console, a second DVD player, video camera, etc).

With a second component in place, the rear passengers can choose to watch the same movie, different movies, or one can watch a movie while another plays a game, or both can play a game against each other. This system allows maximum flexibility and choice for rear occupant entertainment and, unlike after-market systems, is crash tested and warranted through normal Mercedes-Benz standards.

# AUTO SPIES



## **Keyless Go**

With the optional Keyless Go system, several transceiver antennas in the car sense the presence of the SmartKey fob. As long as the driver has the fob in a pocket or bag, gently pulling one of the door handles unlocks the car.

The driver starts the car by depressing the brake pedal and touching a button on top of the gearshift. Keyless Go also makes it hard to lock the keys in the trunk. If the keys are dropped into the trunk and the lid closed, it will automatically pop open in a few seconds.

## **Parktronic**

Parktronic uses a series of sonar-type sensors in the front and rear bumpers to detect obstacles in the system's field of view. The system provides audible warnings and displays the proximity of obstacles using bar graph displays – one on the center dashboard for the front and another for the rear that's visible in the rear-view mirror.

## **Power Tailgate**

The new GL-Class sport-utility offers an optional power tailgate. Pressing a button on the driver's door or the remote control opens the tailgate gently by means of an electric motor and two springs. Pressing a button on the inside of the lid or on the driver's door pulls the lid downward, and a servo locking mechanism then latches the lid completely. As a safety precaution, the lid is designed to stop closing if light force is applied before it latches.

## **Surround Sound On Wheels**

An optional harman/kardon Logic 7 digital surround sound system provides an even more luxurious listening experience. The system converts every conventional stereo signal from the radio and CD player into surround sound with seven output channels, offering audio perfection for passengers, regardless of where they are sitting. The sound system includes a digital signal processor and plays through 11 high-end speakers. The system even changes volume automatically to compensate for ambient driving noise.

# AUTO SPIES



## DVD Navigation

The optional GPS navigation system features color digital maps that are displayed on the COMAND screen, with a moving icon on the display representing the vehicle's position. Data is constantly being gathered from GPS satellites to pinpoint the vehicle's exact position on the map, and even when satellite signals are blocked by trees, overpasses or tunnels, the system's integration makes use of speed and steering angle signals to continue providing accurate vehicle position. A zoom-in feature allows small side streets and back roads to be viewed in detail, and zooming out can show major highways in perspective for hundreds of miles around. A single DVD provides detailed maps for all of North America.

The system's most powerful feature is undoubtedly the ability to input a destination and follow its directions. A microprocessor calculates the best route, which is highlighted on the map display, and a pleasant voice provides turn-by-turn directions. In addition, an auxiliary display in the bottom of the speedometer can show a countdown to the next turn and the remaining mileage to the destination. While the map display is loaded with useful information, the instructions in the "heads-up" dash display are all the driver really needs to get there.

The navigation system can be set to calculate routes via highways or secondary roads, and to a specific address or just to a street or town district. The system can even be programmed to re-route the car around traffic jams and road constructions, and in the future, real-time traffic reports will be integrated with the nav system's re-route feature.

# AUTO SPIES



## GL450 STANDARD EQUIPMENT

### Performance

- All-new unibody design
- 4.6-liter 335-horsepower DOHC V8 engine
- Driver-adaptive seven-speed automatic transmission
- Full-time four-wheel-drive
- Four-Wheel Electronic Traction System (4MATIC)
- 4-wheel independent suspension
- Air suspension
- 4-wheel disc brakes with 4-channel Anti-Lock Braking System (ABS)
- Speed-sensitive power steering
- 18-inch aluminum alloy wheels
- 265 / 65 R18 All Season radial tires

### Safety and Security

- Safety cell and crumple zone body
- Active front head restraints
- Driver and passenger two-stage adaptive front air bags
- Seat-mounted side impact air bags in 1<sup>st</sup> and 2<sup>nd</sup> rows
- Window curtain air bags spanning all three seating rows
- Seat-belt tensioners for all outboard seats
- Adaptive belt-force limiters for the front seats
- Belt force limiters for all other outboard seats
- Central locking system
- Automatic anti-theft alarm
- Illuminated entry system

### Exterior

- Dual chrome-rib grille
- Halogen headlamps with high-impact polycarbonate lenses
- Dual heated power side-view mirrors
- Rear-window defroster
- Rear wiper
- Rain sensor

AUTO SPIES



## Interior

- Multi-function steering wheel (and Instrument cluster display)
- Tilt and Telescopic steering column
- Modular COMAND system (single CD slot and aux audio input)
- Power front seats
- Heated front seats
- Power windows with express down and up (on door panel)
- Birds-eye Maple wood interior trim
- Easy fold-down rear seat (60:40 split for passenger and cargo versatility)
- Power folding 50/50 split third row seats
- Air conditioning with dust filter
- Privacy glass
- Tele Aid
- Roof Rails
- Homelink programmable door opener
- Cruise control
- Chrome door handles, tailgate trim and side molding
- 8-speaker, audio system with AM/FM/Weatherband/single CD slot and integrated controls for CD changer located in glove box
- Auxiliary jack for external audio devices (ipods, etc.)
- Full instrumentation including speedometer, tachometer, clock, fuel and temp gauges
- Delayed-shutoff front courtesy lamps
- Four reading lights
- Rear seat and cargo-area courtesy lights
- Illuminated visor vanity mirrors
- Front center armrest with split-level storage
- Two front console cupholders and door bottle holder
- Second and third row cupholders
- Storage pockets in dash, doors and front of console
- Retractable cargo cover
- Rear Stationary Sunroof with sunshade

# AUTO SPIES



## Optional Equipment

- Bi-Xenon headlights with active curve feature & corner-illuminating front fog lights
- Off-Road package: two-speed transfer case with center & rear diff locks;
- harman/kardon™ Logic 7® 11-speaker surround-sound audio system with rear audio controls
- Rear Seat Entertainment system
- Three-zone AC (includes rear temp zone)
- Keyless-Go
- DISTRONIC
- Parktronic
- Satellite radio
- Power tailgate
- DVD navigation
- Rear-view back-up camera
- Multi-contour front seats
- Heated 2<sup>nd</sup> row seats
- Wood-leather steering wheel
- Heated steering wheel
- Auto-dimming/power folding mirrors
- Memory System for seats
- Power steering column with entry-exit feature
- Class IV trailer hitch package (includes TSA)
- 19-inch wheels with front and rear skid plates
- Sunroof Package

# AUTO SPIES



## 2007 Mercedes-Benz GL-Class Technical Data

	<b>GL450</b>
<b>Vehicle type</b>	Four-door, seven-passenger luxury sport utility
<b>Body</b>	Steel unit body
<b>Aerodynamic drag (Cd)</b>	0.37
<b>Engine</b>	90-degree V8
<b>Material</b>	Aluminum cylinder block and heads
<b>Valve design</b>	Four valves per cylinder
<b>Valvetrain</b>	Double overhead cam per cylinder bank; duplex chain driven; variable valve timing
<b>Intake System</b>	Two-stage intake manifold, tumble flaps
<b>Fuel System</b>	sequential multi-point electronic fuel injection
<b>Ignition System</b>	One centrally mounted spark plug and ignition coil per cylinder
<b>Emission controls</b>	Internal EGR, secondary air injection, two three-way catalytic converters with linear oxygen sensors
<b>Displacement (cu. in./cc)</b>	284.5 / 4,663
<b>Bore (in./mm)</b>	3.66 / 92.9
<b>Stroke (in./mm)</b>	3.39 / 86.0
<b>Compression ratio</b>	10.7:1
<b>Horsepower (SAE @ rpm)</b>	335 @ 6,000
<b>Torque (lb.-ft. @ rpm)</b>	339 @ 2,700 – 5,000
<b>Max. engine speed</b>	6,500
<b>Transmission</b>	Seven-speed adaptive electronic automatic
<b>Shift control</b>	Direct Select, manual shifting
<b>Gear Ratios:</b>	
1 <sup>st</sup>	4.38
2 <sup>nd</sup>	2.86
3 <sup>rd</sup>	1.92
4 <sup>th</sup>	1.37
5 <sup>th</sup>	1.00
6 <sup>th</sup>	0.82
7 <sup>th</sup>	0.73
Reverse	3.42
R 2	2.23
<b>Final drive</b>	3.70
<b>Traction Control</b>	Four-wheel electronic traction system
<b>Stability Control</b>	ESP Electronic Stability Program
<b>Suspension</b>	Four-wheel independent with Airmatic (optional ADS adaptive damping)
<b>Front</b>	Double control arm, air springs, gas shocks, stabilizer bar
<b>Rear</b>	Four-link, air springs, gas shocks, stabilizer bar

<b>Steering</b>	Speed-sensitive power-assisted rack-and-pinion
<b>Overall ratio</b>	18.6 : 1
<b>Turns, lock-to-lock</b>	3.6
<b>Turning circle (ft.)</b>	39.7
<b>Brakes</b>	Power-assisted four-wheel vented discs (Four-channel ABS and Brake Assist Plus)
<b>Front discs: Diameter Calipers</b>	14.7 in. (375 mm) two-piston, fixed
<b>Rear discs: Diameter Calipers</b>	13.0 in. (330 mm) single-piston, floating
<b>Wheels</b>	8.5 x 18 (aluminum)
<b>Tires</b>	265 / 60 HR 18
<b>Exterior Dimensions (in.)</b>	
<b>Wheelbase</b>	121.1 / 3,075
<b>Front Track</b>	65.0 / 1,651
<b>Rear Track</b>	65.1 / 1,654
<b>Length</b>	200.3 / 5,088
<b>Width</b>	75.6 / 1,920
<b>Height</b>	72.4 / 1,840
<b>Overhang: front</b>	34.2 / 870
<b>Rear</b>	45.0 / 1,143
<b>Entry-departure angle</b>	33° / 27°
<b>Ramp angle</b>	23°
<b>Curb weight (lbs.)</b>	5,249 / 2,380
<b>Ground clearance</b>	7.9 / 200 (10.9 / 280 with air suspension)
<b>Fording depth</b>	19.3 / 490 (23.6 / 600 with air suspension)
<b>Int. Dimensions (in / mm)</b>	
<b>Head room: Front</b>	40.1 / 1,019
<b>2<sup>nd</sup> row</b>	40.6 / 1,031
<b>3<sup>rd</sup> row</b>	38.2 / 979
<b>Leg room: Front</b>	43.0 / 1,092
<b>2<sup>nd</sup> row</b>	40.0 / 1,016
<b>3<sup>rd</sup> row</b>	34.0 / 864
<b>Knee room: Front</b>	40.3 / 1,027
<b>2<sup>nd</sup> row</b>	39.5 / 1,003
<b>3<sup>rd</sup> row</b>	34.2 / 869
<b>Shoulder room: Front</b>	58.3 / 1,482
<b>2<sup>nd</sup> row</b>	58.9 / 1,495
<b>3<sup>rd</sup> row</b>	50.5 / 1,282
<b>Capacities (cu. ft.)</b>	
<b>Cargo vol. (seats up)</b>	14
<b>(3<sup>rd</sup> row down)</b>	43.8
<b>(2<sup>nd</sup> &amp; 3<sup>rd</sup> row down)</b>	83.3
<b>Fuel Tank (gal./l.)</b>	26.4 / 100
<b>Performance</b>	
<b>0-60 mph (seconds)</b>	7.4 (preliminary)
<b>Top Speed:</b>	130 (electronically limited)
<b>EPA Fuel mileage:</b>	TBD



# AUTO SPIES

