The Lexus GS 450h is powered by Lexus Hybrid Drive that combines the advantages of electric motor/generators and a gasoline engine.

The "450" in GS 450h represents the power output of the engine and hybrid battery which, when combined, approximate the power of a 4.5-liter V8 engine.

The Lexus GS 450h does not need to be plugged in like an electric car. Lexus Hybrid Drive automatically charges itself.

The Lexus GS 450h hybrid drive provides the high level of performance associated with Lexus, along with improved gas mileage and reduced emissions.

The Lexus GS 450h offers the high level of quality and luxury features that is expected from a Lexus vehicle.

We invite you to discover more about the exciting Lexus GS 450h and Lexus Hybrid Drive in the pages of this booklet. For further details, contact your dealership, see the vehicle Owner’s Manual and other owner information materials in the vehicle, or log onto www.lexus.com.
Hybrid Overview

What’s Inside...

Driving the **GS 450h**
Starting, driving, parking attendant instructions, long-term parking, running out of fuel, and battery facts.

**Hybrid Power Driving Performance**
**GS 450h** Performance, The **GS 450h** versus the Competition, What you can expect from the **GS 450h**.

**EPA Mileage Estimates & Fuel Economy**
Quick Facts - EPA Mileage Estimates, Why you may not achieve the EPA estimates, Ten Tips for Improving Fuel Economy.

**Multi-information Display & Monitors**
Multi-information display, Energy Monitor Screen, Consumption Monitor, Power Gauge and Hybrid Battery Status.

**GS 450h Hybrid Technology**
How the system works, the system’s components and what they do.

**Frequently Asked Questions**
A wide range of questions often asked about the **GS 450h** and hybrid technology.

**GS 450h Hybrid Drive Specifications**
Specifications pertaining to the hybrid system.

**Glossary of Hybrid Technology Terms**
Definitions of commonly used hybrid technology terms.

**Index**
Driving the GS 450h

On the whole, driving the GS 450h is not very much different from driving a conventional vehicle. However, there are some subtle differences you will notice.

• **Pressing the “POWER” button starts the vehicle, but may not start the engine.**
  To start the GS 450h press and hold the brake pedal, then press the “POWER” button. After a few seconds, the "READY" light in the Power Gauge will come on. Once the "READY" light comes on, place the transmission lever into the desired position and start driving. When accelerating slowly, the GS 450h can drive up to about 20 miles per hour on electric power alone, so the gasoline engine may not start for a while depending upon the need.

• **The transmission will feel different.**
  The GS 450h uses an Electronically-controlled Continuously Variable Transmission (ECVT) with an advanced low and high range torque multiplication device. The transmission does not shift with fixed gear ratios like a conventional transmission, so it delivers power efficiently and smoothly.

• **The engine will turn off and on while you drive.**
  The engine will automatically turn on and off as needed. At medium or high speeds, it is normal for the engine to be on most of the time. At low speeds or when stopped, the engine may or may not be on, depending on the need.

• **You will notice different sounds while driving.**
  The engine sound will be more steady than a conventional vehicle when accelerating due to the smooth operation of the ECVT. It is also normal for the new technology of the Lexus Hybrid Drive to make a "whirring" sound while driving.

• **The brakes may feel different.**
  The GS 450h features an advanced, electronically-controlled brake-by-wire system. This system controls both the regenerative braking system and the conventional braking system. As a result, the brakes may feel different from a conventional vehicle.

*(continued next page)*
Driving the GS 450h

- **Some parking attendants may not be familiar with the GS 450h.**
  To properly operate the vehicle, these basic tips are important:
  1. Press and hold the brake pedal, then press the “POWER” button.
  2. Begin driving when “READY” light stays on.
  3. The engine will start and stop automatically.
  New GS 450h vehicles come with parking attendant key ring tabs, with these tips in English and Spanish.

- **When refueling, the fuel door may take a few moments to open.**
  As part of emissions system operation, it may take up to 15 seconds for the fuel door to automatically release after the release button is pressed. The Multi-information Display in the instrument cluster will display “Refuel Ready” when the door releases.

- **Running out of fuel.**
  Do not run your GS 450h out of fuel. The GS 450h is not designed to be operated with the fuel tank empty. If you try to start the GS 450h with the fuel tank empty, the hybrid system may become disabled on the third attempt. If you continue to drive with the fuel tank empty, the hybrid battery will rapidly discharge and the vehicle will shut down. If you run out of fuel, immediately pull over to a safe location and turn off the vehicle. Be sure to add fuel before attempting to restart the vehicle or continuing to drive.

![Hybrid Battery cooling vents.](image)

- **Hybrid Battery cooling vents.**
  Do not block the hybrid battery cooling vents located below the rear window with any items. Doing so could cause overheating of the hybrid battery.

- **Maintaining charge for your 12-volt battery**
  The following will help keep your vehicle’s 12-volt battery fully charged:
  Drive vehicle at least weekly. Operate accessories with vehicle in “READY” mode. When parking, make sure doors and trunk are closed and lights are turned off.

- **Long-term parking.**
  If the vehicle has been parked for a long time, the 12-volt and the hybrid battery will discharge gradually. For parking longer than about 30 days, charging of the 12-volt battery may be required. Your Lexus dealer has details. To keep the hybrid battery in good condition, drive the vehicle at least once every several months for at least 30 minutes or ten miles. If the hybrid battery becomes fully discharged and the vehicle will not start, even with a jump start to the 12-volt battery, contact your Lexus dealer.
While hybrid vehicles have become known for "exceptional fuel economy," for the GS 450h, Lexus engineers had the goal of creating a new type of hybrid that delivered the highest levels of "hybrid power driving performance." The result was a hybrid that delivers the acceleration of a powerful gasoline V8 engine. In fact, the "450" in GS 450h stands for the power output of the 3.5 L engine and hybrid battery which, when combined, approximate the power of a 4.5 liter V8 engine.

The GS 450h versus the competition

The GS 450h can deliver smooth V8-like acceleration in performance driving conditions or it can deliver economy in economy driving conditions, while complying with very clean Super Ultra Low Emission Vehicle (SULEV) tailpipe emissions standards. You can choose performance driving by simply pressing on the accelerator. Choosing to maximize economy driving with the GS 450h, or other vehicles, involves many factors. Please see "Ten tips for improving fuel economy" on page 8 of this booklet for details. Comparing the ratings of the GS 450h with eight and twelve cylinder-powered luxury sports sedans highlights the versatile capabilities of the Lexus Hybrid Drive system.

<table>
<thead>
<tr>
<th>Vehicle Make/Model</th>
<th>0-60 Acceleration</th>
<th>EPA MPG City / Highway</th>
<th>Emissions Class</th>
<th>HP (Horsepower)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007 Lexus GS 450h (3.5L V6 Hybrid)</td>
<td>5.2 sec(^2)</td>
<td>25 / 28</td>
<td>SULEV(^1)</td>
<td>339(^1)</td>
</tr>
<tr>
<td>2006 Bentley Continental Flying Spur (6.0L W12)</td>
<td>4.9 sec(^2)</td>
<td>11 / 18</td>
<td>LEV(^4)</td>
<td>552(^1)</td>
</tr>
<tr>
<td>2006 BMW 550 Steptronic Auto. (4.8L V8)</td>
<td>5.5 sec(^2)</td>
<td>17 / 25</td>
<td>ULEV II(^3)</td>
<td>302(^1)</td>
</tr>
<tr>
<td>2006 Maserati Quattroporte (4.2 V8)</td>
<td>5.1 sec(^2)</td>
<td>12 / 18</td>
<td>LEV(^3)</td>
<td>400(^1)</td>
</tr>
<tr>
<td>2006 Mercedes-Benz E500 (5.0L V8)</td>
<td>5.9 sec(^2)</td>
<td>17 / 25</td>
<td>ULEV(^1)</td>
<td>360(^1)</td>
</tr>
</tbody>
</table>

1 Source: Manufacturer
2 Source: Manufacturer’s Estimate
3 Source: California Air Resources Board
4 Source: EPA Fuel Economy Guide
5 Source: 2007 GS 450h preliminary mileage estimates determined by Lexus.

EPA mileage estimates not available at time of printing. Actual mileage may vary.
Hybrid Power Driving Performance

What you can expect from your GS 450h:

• The acceleration performance of a 4.5 L V8
  0 – 60 mph acceleration in 5.2* seconds  
  (Source: Manufacturer’s estimate)

• Better mileage ratings than most V8-powered Sport Sedans
  The mileage estimate ratings for the GS 450h are higher than 
  the typical V8-powered 5-passenger sport sedan.

• Significantly lower emissions than most V8-powered Sport Sedans
  The GS 450h is classified as a Super Ultra-Low Emissions Vehicle (SULEV).

• Excellent performance at high altitudes and in mountain driving.
  Traditional gasoline-powered vehicles may suffer from decreased performance 
  at higher altitudes where there is less oxygen in the air. Because the power 
  output of the hybrid battery is not directly affected by altitude, the GS 450h’s 
  acceleration performance can be less affected by altitude than a conventional 
  vehicle.

• Responsive and smooth performance
  Lexus Hybrid Drive is completely new for GS 450h. The system combines a 
  high performance 3.5-liter V6 engine with a new Electronically Continuously 
  Variable Transmission (ECVT). The ECVT has a new compact, high-output, 
  permanent magnet drive motor and an advanced low and high range torque 
  multiplication device. The V6 engine and ECVT together deliver exceptional 
  responsiveness and smoothness. When accelerating from a stop to highway 
  speeds, the range changes from low to high at about 50 mph. When decelerat-
  ing from highway speeds, the range changes from high to low at about 30 mph. 
  (continued next page)

* This performance capacity figure is for comparison only, and was obtained with a prototype 
  vehicle by a professional driver using special safety equipment and procedures. This should 
  not be attempted on public streets or highways.
Hybrid Power Driving Performance

What you can expect from your GS 450h: (continued)

• Responsive and smooth performance (continued)

The “D” transmission range is used for performance, normal, or economical driving. Only use the "S" transmission ranges if needed to help maintain vehicle speed when going down steep grades. The lower the range, the greater the engine braking force.

• Driver-adjustable performance, the “PWR-Hybrid-SNOW” switch

The “PWR-Hybrid-SNOW” switch located on the center console has three modes:
Set to "Hybrid PWR" for increased responsiveness. Once set, it will remain in this mode.
Set to "Hybrid" Normal (center position) for balanced performance and economy. Once set, it will remain in this mode. Toggle to "Hybrid SNOW" for controlled acceleration on slippery surfaces. It will remain in this mode until the vehicle is turned off. (To access this switch, slide back the center console armrest.)

• An extremely quiet ride

When the GS 450h is driven by electric motors alone, such as at idle, when backing up, and when accelerating slowly to about 20 mph, the Noise, Vibration and Harshness (NVH) level is about half that of a conventional gasoline-powered engine, providing an extremely quiet ride.
Quick Facts - EPA Mileage Estimates

The EPA estimated fuel economy numbers are derived from vehicle testing conducted at the U.S. Environmental Protection Agency’s (EPA’s) National Vehicle and Fuel Emissions Laboratory in Ann Arbor, Michigan. Vehicle manufacturers also submit test results based on strict EPA standardized drive patterns. Each year, the EPA provides the data to the Department of Energy, which publishes the results at www.fueleconomy.gov.

Some quick facts about EPA estimated fuel economy tests:

Federal law requires EPA estimated fuel economy to be provided on a fuel economy label affixed to the window of every vehicle (see Figure 1). The EPA estimates serve as a useful guide for comparing the relative fuel efficiency of various vehicles and are intended for comparison only. Fuel economy estimates are determined under ideal laboratory conditions following a standardized test determined by federal law. Each vehicle must complete two tests simulating city and highway driving. The vehicle’s drive wheels are placed on special equipment that simulates the driving environment.

EPA Tests Assume:

- Very slow acceleration
- Straight, level roads
- Air-conditioning is turned off
- 18% idle time for city test
- 0 idle time for highway test
- Average speed of 20 mph for city test (top speed 56 mph)
- Average speed of 48 mph for highway test (top speed of 60 mph)

(See www.fueleconomy.gov for further details.)
EPA Mileage Estimates & Fuel Economy

**Typical EPA Mileage Estimate* data found on vehicle window sticker**

Figure 1.

![Typical EPA Mileage Estimate](image)

*2007 GS 450h preliminary mileage estimates determined by Lexus. EPA mileage estimates not available at time of printing. Actual mileage may vary.

**Why you may not achieve the EPA estimates**

Because the EPA fuel economy estimates are derived in ideal laboratory conditions, they are just estimates, which may not reflect real world conditions. There are many factors which may cause your actual mileage with the GS 450h, or other vehicles, to vary from the EPA estimates:

- **Quick acceleration and heavy braking may reduce mileage by as much as 33% in highway driving and as much as 5% in city driving.**
- **Driving at highway speeds above 60 mph.** (The maximum EPA highway test speed is 60 mph, the average speed is 48 mph)
- **Driving on hilly or mountainous terrain and unpaved roads.** (EPA tests assume flat roads.)
- **Short trips cause the engine to run more as a percentage of driving, as it warms the emissions system.**
- **Carrying extra weight or towing a trailer.** (The EPA test assumes only 300 lbs. of passengers and cargo.)
- **Cargo racks.** (Vehicles are tested without cargo racks, which can increase wind drag.)
- **Poor maintenance.** (Vehicles tested are in top condition.)
- **New vehicles.** (Optimum fuel economy may not be realized until the engine is "broken-in," which may take up to 5,000 miles.)

(Source for above information: www.fueleconomy.gov)
Ten tips for improving fuel economy

The following tips can help you achieve the best possible fuel economy:

1) Plan ahead to combine short trips in order to minimize cold starts.

2) Accelerate slowly.

3) Avoid heavy braking. Monitor traffic to minimize braking and coast whenever possible.

4) Avoid speeds in excess of 60 mph; fuel economy suffers at speeds higher than 60 mph and drops significantly above 70 mph.

5) In stop-and-go traffic, accelerate to the desired level then lift off the accelerator pedal allowing the vehicle to run more on electric power.

6) Check tire pressure and maintain it at the recommended pressure.

7) Avoid carrying unnecessary loads; extra weight reduces fuel economy.

8) Use the air conditioner and defroster only as needed.

9) Set the driver-adjustable "PWR-Hybrid-SNOW" console switch in the "Hybrid" Normal (center position).
   (To access this switch, slide back the center console armrest.)

10) Drive in the "D" transmission position for best fuel economy. Only use the "S" transmission ranges if needed to help maintain vehicle speed when going down steep grades. The lower the range, the greater the engine braking force.
The standard **Multi-information Display** shows a simplified representation of the approximate flow of energy within Lexus Hybrid Drive. The display does not show all of the components of the system.

To show the **Energy Monitor display**, press the “DISP.” button located on the steering wheel, until you reach the Energy Monitor display. It may be necessary to press the button more than once to reach this display.

**The vehicle is being primarily driven by the engine.**
- The arrow points away from the engine and then to the wheel.

*The level of hybrid battery charge, circled in red, will be shown by the amount of white within the battery image.*

**The vehicle is being driven by the hybrid battery.**
- The arrow points away from the hybrid battery and then to the wheel.

**The vehicle is being driven by both the engine and the hybrid battery.**
- The arrows point away from the hybrid battery and the engine and then to the wheel.

**The vehicle is coasting or slowing down, regenerating electricity and charging the hybrid battery.**
- The arrow points away from the wheel and then to the hybrid battery.

**The vehicle is stopped and the hybrid battery is not being charged.**
- No arrows are displayed.
Multi-information Displays & Monitors

**The Energy Monitor**

The standard Energy Monitor shows a simplified representation of the approximate flow of energy within the hybrid system. The display does not show all of the components of the system. The display is located at the center of the dashboard.

The Energy Monitor display changes as the GS 450h transitions through different driving conditions. The Energy Monitor display will show the changes in energy and power flow through the system at a given time as the vehicle is driven.

**To access the Energy Monitor,** press the "INFO" button located on the left edge of the display. On the touch screen that appears, touch the “Trip Information” button.

**Energy Monitor description**

Energy flow

- **Orange =** Mechanical drive power
- **Yellow =** Electrical drive power
- **Green =** Electrical / regenerative power

Press to go to the Consumption Monitor.

- "ELECTRIC MOTOR" represents Electric Starter Motor/Generator (MG1) and Electric Drive Motor/Generator (MG2) together.
- "ENGINE" represents the V6 Gasoline Engine

(continued on next page)
The vehicle is stopped, the engine is off, and the hybrid battery is not being charged.
• No arrows are displayed.

The vehicle is being driven by the electric motor.
• The arrows point away from the hybrid battery to the front electric motor and then to the rear wheels.
Typical Energy Monitor Displays (continued)

The vehicle is being driven by the engine and the electric motor.
- The arrows point away from the hybrid battery, the engine, and the electric motor and then to the rear wheels.

The vehicle is coasting or slowing down, regenerating electricity and charging the hybrid battery.
- The arrows point away from the wheels and electric motors and then to the battery.

(continued on next page)
The vehicle is stopped and the engine is charging the hybrid battery.
• The arrows point from the engine to the electric motor, then to the hybrid battery.

Hybrid Battery Status information

Battery status indicator showing five blue bars, indicating battery is at medium charge level.

The approximate amount of electric charge available in the hybrid battery is displayed in one of 8 different levels. Unlike the vehicle fuel gauge, it is normal for the battery status indicator to actively move up and down and change color, depending on driving conditions. The top green bar may not appear except after driving down long mountain grades.

(continued on next page)
The Consumption Monitor

To access the Consumption Monitor screen, press the “INFO” button located on the left edge of the center dashboard display. On the touch screen that appears, touch the “TRIP INFO” button.

The Consumption Monitor description

Press to clear all data displayed except Cruising Range

Press to go to the Energy Monitor screen

Best MPG Display (see page 15)

Average MPG Display (see page 16)

Press to:
- Capture and display Best MPG
- Clear Average MPG Bar Chart
- Clear Regenerated Energy Box Chart
- Clear Average MPG

(continued on next page)
The Consumption Monitor (continued)

The Consumption Monitor displays two charts combined into one:

**Average MPG Bar Chart** - (Green bars - Prior driving, Yellow bars - Current driving) The bars display the average fuel economy in miles per gallon (MPG). The higher the bars reach, the better the fuel economy. Each bar represents the average fuel economy for a 1-minute period. When the vehicle is in "READY" mode, bars showing the 30 minutes of prior driving will be green. Bars that appear during current driving will be yellow. When the vehicle is in "READY" mode but not moving for 1-minute or longer, the chart will move to the left with no bars(s) for that time period. To clear the Average MPG Bar Chart and other displays, press "Reset."

**Regenerated Energy Box Chart** - The small boxes with "E" in the center represent the amount of electricity that has been regenerated in 50 Wh (Watt hour units). A partial box means less than 50 Wh. Each column of stacked boxes represents a 1-minute period. The columns shift to the left every 1 minute. A maximum of four stacked boxes will be displayed in a column for any 1-minute period. The more boxes there are, the more regenerative energy is produced and stored in the hybrid battery. To clear the Regenerated Energy Box Chart and other displays, press "Reset."

**Best MPG Display** - To capture and display the best 1-minute average miles per gallon, press "Reset." The Best MPG display will show the best 1-minute average mpg or the current Best MPG figure, whichever is greater. To clear the Best MPG and other displays, press "Reset All."

(continued on next page)
Multi-information Displays & Monitors

The Consumption Monitor (continued)

**Average MPG Display** - This displays the average fuel economy since "Reset" was last pressed. The average MPG is calculated about every 10 seconds. To clear this and other displays, press "Reset" or "Reset All."

**Cruising Range Display** - This displays the estimated range the vehicle can be driven.

**The Power Gauge**

The **Power Gauge** indicates the approximate instantaneous power in kilowatts the hybrid system delivers or receives. The needle will move up towards 250kW during acceleration and downward into the blue area when the hybrid system is regenerating power during coasting and braking conditions.
A hybrid vehicle is a vehicle that combines power from different sources to efficiently operate. Lexus has spent many years and logged millions of test miles developing and testing the hybrid technology found in the GS 450h.

The Lexus Hybrid Drive that powers your Lexus GS 450h is an advanced system that incorporates the advantages of both electric motors and gasoline engines.

The GS 450h can be driven on hybrid battery power alone, for short distances at lower speeds, then the engine will start when power is needed to recharge the 12-volt and hybrid batteries, or when driving conditions call for more power.

Lexus Hybrid Drive automatically controls energy usage in the most efficient way possible. The system even captures energy when the vehicle is slowing down.

This chapter explains some of the components that make up Lexus Hybrid Drive and their functions.
GS 450h Hybrid Technology

Lexus Hybrid Drive main components

1. **3.5 L 24-V DOHC V-6 Engine with dual VVT-i** – The primary power source for your vehicle, the engine works in conjunction with the hybrid battery to deliver power to the ECVT.

2. **Electric Starter Motor/Generator (MG1)** – Serves as the starter motor for the engine and a "pathway" for the engine's power to reach the rear wheels.

3. **Electric Drive Motor/Generator (MG2)** – Delivers power to the rear wheels. It can run alone or with the engine. It is driven by electrical power from MG1 and/or the hybrid battery. During braking or deceleration, it generates electricity to recharge the hybrid battery.

4. **Hybrid Battery** – Composed of sealed nickel-metal hydride modules, the 288-volt hybrid battery is located in the trunk between the rear wheels. It supplies power to the electric drive motor during start-up, acceleration, uphill driving, and reverse. It supplies power to the Inverter for use by the electric motors and stores regenerative energy captured during coasting and braking conditions.

(continued on next page)
Lexus Hybrid Drive main components (continued)

5 **Inverter** – Converts the hybrid battery’s high voltage DC current into AC current for the electric motors and vice versa, depending on driving demands and electrical system needs. Taking the function of a conventional alternator, it maintains the 12-volt battery. The inverter can also boost the hybrid battery’s power up to 650 volts as needed.

6 **Hybrid Electronic Control System** – Monitors and controls the power flow operation of MG1, MG2 and the inverter.

7 **Regenerative Braking System** – Helps recover energy used to slow the vehicle during braking or coasting. During braking or coasting, MG2 turns into a generator, which creates electricity to help charge the hybrid battery. As MG2 creates electricity, it creates drag, which helps slow the vehicle. The conventional brake system and the regenerative brake system work in conjunction with each other.

8 **Electronically-controlled Continuously Variable Transmission (ECVT)** – Delivers smooth acceleration without conventional gear shifting, while enhancing efficiency. It has fewer parts than a conventional automatic transmission. The MG1 and MG2 are part of the ECVT. The advanced combination of the electric motor/generators and low and high range torque multiplication device helps optimize available performance and economy.

9 **12-volt Battery** – Enables the Hybrid Electronic Control System to "start" the vehicle (vehicle “READY” mode) and operates the basic electrical system. This battery is charged by the inverter.
How Lexus Hybrid Drive works.

Lexus Hybrid Drive incorporates gas-engine power with electric motor efficiency in a seamless manner.

Typically, the system works as follows:

Starting from a stop
The Electric Drive Motor (MG2) drives the vehicle. The engine is not required to start moving the vehicle, but may come on to charge the hybrid battery or make heat available for the climate control and emissions systems.

Normal acceleration
MG2 and the engine drive the vehicle. The engine drives MG1 as a generator to power MG2 and charge the hybrid battery as needed.

Full acceleration
The engine and MG2 work together to drive the vehicle. The hybrid battery supplies additional power to MG2.

Cruising (constant speed)
Primarily, the engine will drive the vehicle. The engine, MG1 and MG2 will come on as needed depending on road conditions and other factors. MG2 may act as a motor or as a generator depending on the need to make power or regenerate electricity to recharge the hybrid battery.

Coasting and braking
As part of the regenerative braking system, MG2 can act as a generator to regenerate electricity to charge the hybrid battery. The engine may turn off before the vehicle comes to a complete stop.

Backing-up
MG2 reverses direction to drive the vehicle. The engine is typically off, unless it is needed to recharge the hybrid battery or warm-up the engine.
Frequently Asked Questions

Q: How should I choose between the GS 430 and a GS 450h hybrid?
A: If most of your driving is highway cruising, or you leave your vehicle parked for several weeks at a time, or you need maximum trunk space, the GS 430 may best meet your needs. If you want maximum acceleration, smoothness, and responsiveness, plus improved fuel economy capability, the GS 450h may best meet your needs.

Q: What changes to the interior of the GS were required to accommodate Lexus Hybrid Drive for the GS 450h?
A: The trunk size has been reduced to make room for the hybrid and 12-volt batteries, and other hybrid system components.

Q: Will the GS 450h qualify for a tax credit?
A: Check with your tax preparer/consultant regarding any hybrid tax credit.

Q: What is the warranty on the GS 450h? What is the warranty on the hybrid battery?
A: In addition to the Basic Warranty of 48-month/50,000 miles and the powertrain and restraint system coverage of 72 months/70,000 miles, there is a hybrid warranty. The Hybrid Vehicle System Warranty is 96 months (8 years)/100,000 miles from the vehicle’s in-service date, whichever occurs first. It is applicable to certain components of the hybrid electronic control system and the hybrid battery. See the Owner’s Manual and other owner information materials in the vehicle for details.

(continued on next page)
Frequently Asked Questions (Continued)

Q: Does the GS 450h qualify to be driven as a single-occupant vehicle in the high occupancy vehicle (HOV) lane?
A: We do not expect the GS 450h to qualify for the HOV lane. Check with your state department of motor vehicles for more information.

Q: Do you have to charge it/plug it in?
A: The Lexus hybrid technology automatically recharges the 12-volt and hybrid batteries using regenerative braking or by running the engine to generate electricity. However, if the vehicle has been parked for a long time, the 12-volt and the hybrid battery will discharge gradually. To help maintain charge for the 12-volt battery, drive the vehicle at least weekly, operate accessories with vehicle in "READY" mode, and when parking, make sure doors and trunk are closed and lights are turned off. For parking longer than about 30 days, charging of the 12-volt battery may be required. See your dealership for details. If the hybrid battery becomes fully discharged and the vehicle will not start, even with a jump start to the 12-volt battery, contact your Lexus dealership.

Q: What maintenance is required?
A: The maintenance requirements are comparable to what a gasoline-powered GS 300/430 requires. The hybrid battery and motor/generators do not require ongoing maintenance. However, to keep the hybrid battery in good condition drive the vehicle at least once every several months for at least 30 minutes. Lexus recommends having GS 450h maintenance and repairs performed by an authorized Lexus dealership. To locate your nearest authorized Lexus dealership, contact Lexus at (800) 255-3987 or log onto www.lexus.com. Maintenance and repairs not performed by an authorized Lexus dealership should be performed by a qualified technician following procedures in Lexus service and repair publications.

Q: What safety standards does the GS 450h comply with?
A: Lexus engineers have spent enormous effort to ensure this vehicle meets or exceeds all of the U.S. government’s stringent safety standards, as do all Lexus vehicles. See the Owner’s Manual and other owner information materials in the vehicle for important Safety Precautions.
## GS 450h Hybrid Drive Specifications

### Hybrid System
- **Engine Type**: 60° V6, aluminum block and heads, certified Super Ultra-Low Emissions Vehicle (SULEV)
- **Displacement**: 3.5 liters (210 cubic inches)
- **Valvetrain**: Four cam, four valves per cylinder, with dual continuously Variable Valve Timing with intelligence (VVT-i)
- **Electric-Drive Motor**: Compact, high-output, permanent magnet electric motor/generator
- **Hybrid Battery**: Sealed, Nickel-Metal Hydride (NiMH) modules, 288-volt
- **Total System Horsepower**: 339 hp @ 6,400 rpm (combined engine and hybrid battery)

### Body, dimensions
- **Curb Weight**: 4,134 lbs.
- **Fuel Tank Capacity**: 17.2 gallons

### Performance
- **0-60 acceleration**: 5.2 seconds<sup>3</sup>
- **Top Track Speed**: 131 mph<sup>3</sup> (electronically-limited)
- **Fuel Consumption**: 25/28<sup>2</sup> (city/highway estimated)

### Drivetrain
- **Type**: Rear-wheel drive
- **Transmission**: (ECVT) Electronically-controlled Continuously Variable Transmission with high and low ranges

### Chassis
- **Brakes**: Four-wheel electronic power-assisted discs, with four-sensor, four-channel Anti-lock Braking system (ABS), Brake Assist and Electronic Brakeforce Distribution (EBD), Electronically-controlled Braking System (ECB), high friction front brake pads, and integrated regenerative brake system.

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<sup>1</sup> These performance capacity figures are for comparison only, and were obtained with prototype vehicles by professional drivers using special safety equipment and procedures. These should not be attempted on public streets or highways.

<sup>2</sup> 2007 GS 450h preliminary mileage estimates determined by Lexus. EPA mileage estimates not available at time of printing. Actual mileage may vary.

<sup>3</sup> Source: Manufacturer’s estimate
Glossary of Hybrid Technology Terms

12-volt Battery
The low-voltage battery that provides electrical power to accessories and the vehicle’s computer, similar to the battery of a conventional vehicle.

AC
Electrical current that reverses its flow in a circuit at regular intervals. The GS 450h’s electric motors operate on AC current.

DC
Electrical current that flows continuously in one direction. The GS 450h’s hybrid battery and 12-volt battery provide DC current.

Electronically-controlled Continuously Variable Transmission (ECVT)
A type of transmission with an infinite number of gear ratios that change depending on vehicle speed and engine rpm. As a result, the engine and the motors operate at their most efficient points regardless of the vehicle’s speed. The ECVT in the GS 450h provides responsive and smooth performance. The advanced combination of electric motor/generators and low and high range torque multiplication planetary gearset are part of the ECVT, which has fewer parts than a conventional automatic transmission.

Engine
In a hybrid vehicle, the word "engine" refers to the gasoline engine, not an electric motor. The gasoline-powered 3.5L V-6 is the primary power source for the GS 450h.

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Glossary of Hybrid Technology Terms (Continued)

**Hybrid Battery**
Composed of sealed Nickel-Metal Hydride (NiMH) modules, the 288-volt hybrid battery provides electric motor power during start-up, acceleration, uphill driving, and reverse. It also stores energy captured during regenerative braking. The hybrid battery is covered for 8 years/100,000 miles which ever occurs first. In normal use, we expect the battery to last longer than the length of this warranty.

**Lexus Hybrid Drive**
Lexus hybrid technology that combines an advanced gasoline engine, electric motor/generators, a hybrid battery, an Electronically-controlled Continuously Variable Transmission (ECVT) and advanced electronic controls to provide powerful acceleration, responsive and smooth performance, economy in economy driving conditions, and very clean tailpipe emissions.

**Inverter**
The inverter converts the hybrid battery’s high voltage DC current into AC current for the electric motors and vice versa, depending on driving demands and the needs of the electrical system. The inverter can also boost the battery’s power up to 650 volts as needed for maximum power.

**kW (Kilowatts)**
A unit of instantaneous electrical power equal to 1000 watts or 1.34 horsepower.

**Motor/Generator**
In a hybrid vehicle, the word "motor" refers to an electric motor which works with the vehicle’s engine to efficiently drive the vehicle. The GS 450h uses permanent magnet AC motors: an electric starter motor/generator (MG1), and an electric drive motor (MG2).

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Glossary of Hybrid Technology Terms

**Planetary gear set**
The component of the ECVT that delivers the efficient mix of engine and electric power to the rear wheels. The operation of the planetary gear set helps provide responsive and smooth acceleration. The GS 450h uses a compact, double planetary Ravigneaux-type geartrain to provide low and high drive, to maximize performance or economy in economy driving conditions.

**Regenerative Braking**
Regenerative braking is a feature that allows an electric motor to act as a generator when braking. It converts the kinetic energy of the car’s motion into electrical energy. Whenever the GS 450h is braking or slowing, the electrical energy made during regenerative braking is used to recharge the hybrid battery and is measured in Watt Hours (Wh) on the Consumption Monitor screen.

**Volt**
The unit of measure for voltage. Voltage is the electrical pressure which causes current to flow in an electrical circuit.

**Watt**
A unit of electrical power. One watt equals 1/746th horsepower.

**Wh (Watt hours)**
Electrical power used, or in the case of the GS 450h, regenerated and measured in terms of time.
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