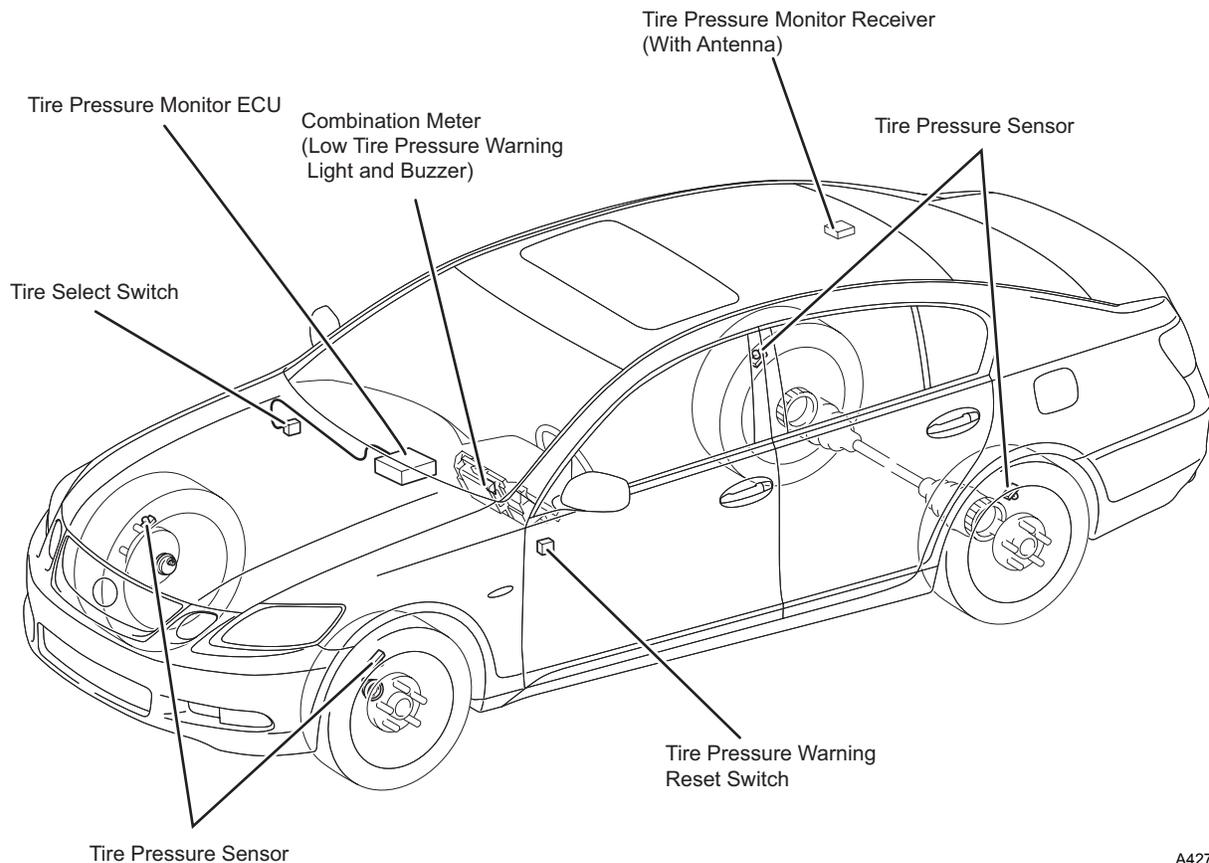


## Tire Pressure Warning System

- A direct-sensing type tire pressure warning system has been newly adopted as standard equipment on all '04 GS430/300 models.
- If the vehicle continues to be driven with one or more of the four tires inflated to a low air pressure that could cause problems in driving, this system will illuminate the tire pressure warning light to inform the driver of the low air pressure.
- Furthermore, this system directly senses the air pressure of each tire through a tire pressure sensor that is attached to each wheel.

### Effectiveness of Tire Pressure Warning System

Effectiveness	Effect of continued driving with low pressure tires
Economy	Reduced fuel economy due to increased rolling resistance of the tires
	Reduced service life of the tires due to uneven wear
Vehicle Characteristics	Reduced drivability and stability
Other	Need for replacing flat tires on highways



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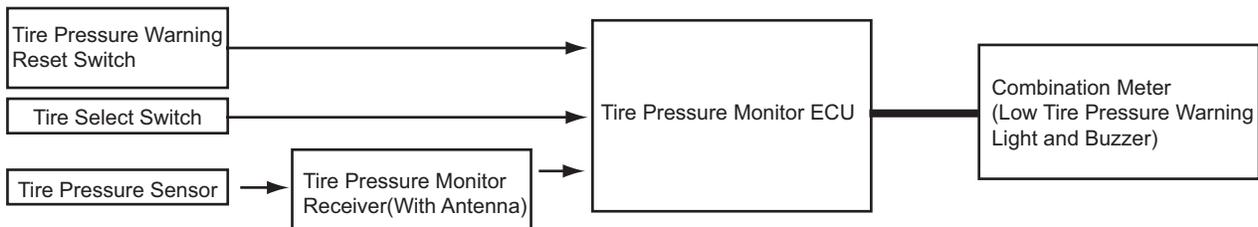
### Main Components and Functions

Components	Functions
Tire Pressure Sensor	Integrated in the air valve on the disc wheel, this sensor measures the tire pressure and transmits the measured value and an ID for identifying the wheel.
Tire Pressure Monitor Receiver (with Antenna)	Located inside the roof, it receives signals from the transmitters, and transmits them to the tire pressure monitor ECU.

Components	Functions
Tire Pressure Monitor ECU	Recognizes that the signals are from the vehicle's own wheels, based on the received ID signals. If the measured values exceed a specified value, this ECU transmits signals to illuminate the pressure warning light in the combination meter.
Tire Select Switch	If transmitter IDs for two sets of tires are registered in the control ECU, the driver uses this switch to select one of the sets.
Low Tire Pressure Warning light	Located in the combination meter, this light informs the driver of a low tire pressure or a system failure.
Tire Pressure Warning Reset Switch	If this switch is pressed continuously for 3 seconds, the system will accept initialization.

### Tire Pressure Warning System Composition

- The tire pressure warning system consists of pressure sensors & transmitters, reception antenna, receiver, tire pressure monitor ECU, tire selector switch, and warning light.
- The four pressure sensors & transmitters measure the pressure of the respective tires, and transmit the ID of the transmitter and the measurement results through radiowave signals. The transmitted signals are received by a receiver (with a built-in antenna), which is mounted inside the roof. The receiver checks whether the received IDs match those that are pre-registered. If the IDs match, the ECU compares the measurement results against the standard values, and illuminates the tire pressure warning light in the combination meter if the pressures are below the standard values. If the pressure drops further, the ECU simultaneously causes the tire pressure warning light to blink and the buzzer to emit a warning sound at regular intervals.



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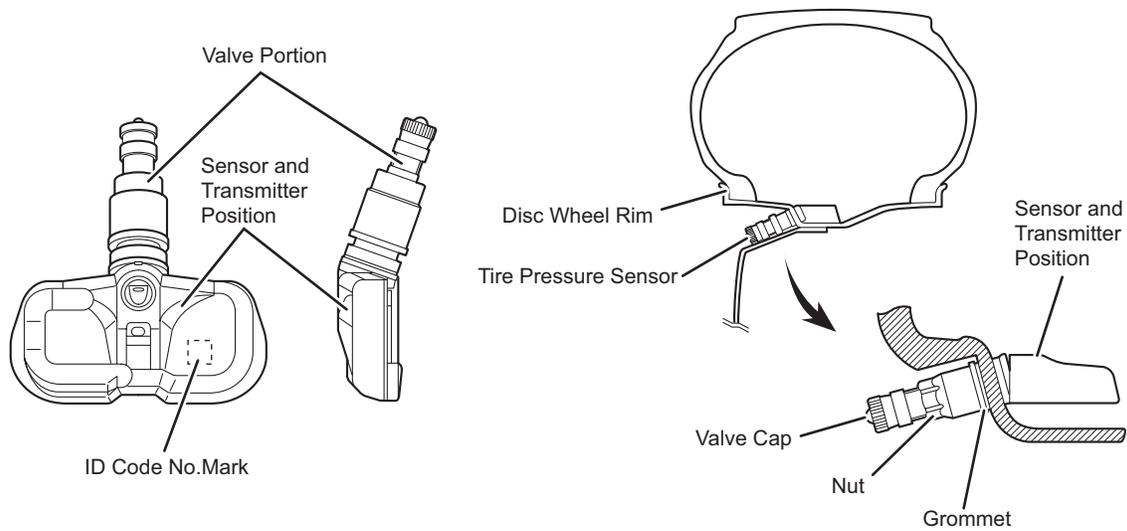
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### Structure of Air Pressure Sensor & Transmitter

- The tire pressure sensor is integrated in the air valve of a disc wheel.
- This sensor operates with a lithium battery, which lasts approx. 10 years. If the battery voltage drops, the tire pressure monitor receiver stores the DTC (Diagnostic Trouble Code) in its memory. If the voltage drops even further and the sensor stops working, it stores the DTC in memory and illuminates the tire pressure warning light to alert the driver.
- Sensors with four different ID code range are used on one vehicle.
- Each sensor has a built-in semi-conductor to directly measure the inflation pressure of the tire.
- In addition to the measured pressure, the identification data of the tire pressure sensor is included in the data that is transmitted to the tire pressure monitor receiver. This is to enable the tire pressure monitor receiver to determine that the received data came from its own tires.
- Frequency of the this sensor is 433.92 MHz.

#### ❖ REFERENCE ❖

- \*1 : Make sure to install the tire pressure sensors to the disc wheels in accordance with the prescribed procedure. Failure to do so could result in the incorrect measurement of the tire air inflation pressure.
- \*2 : Make sure to replace the tires in accordance with the prescribed procedure. Failure to do so could damage the pressure sensors.
- \*3 : For further details regarding the above, refer to the LEXUS GS430/300 Repair Manual.



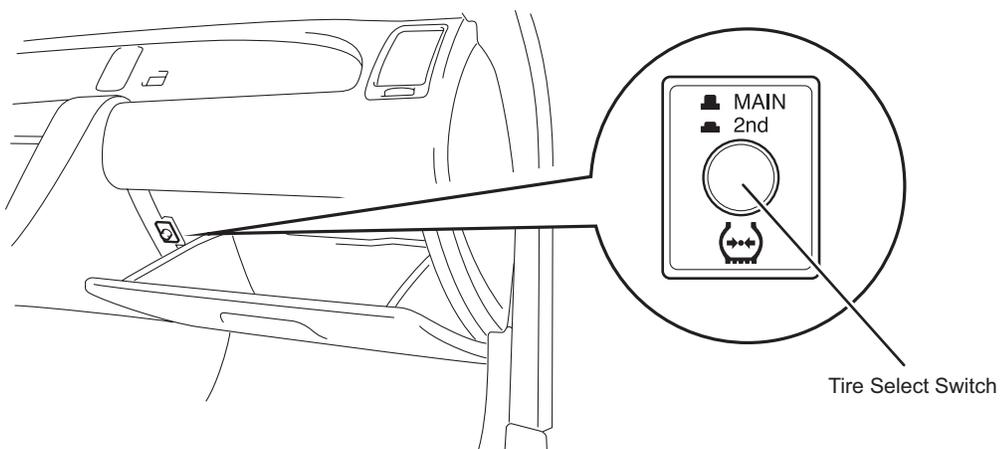
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### ■ Service Tip ■

- If the lithium battery is depleted, replace the entire tire pressure sensor assembly.
- When replacing the tire pressure sensors, select them so that all the four sensors will have different identification marks.
- A new tire pressure sensor that is available as a service part is in the sleep mode in its initial state to prevent the battery from depleting. After the sensor and the tire are correctly mounted on the disc wheel, inflating the tire to the specified pressure causes the sleep mode to cancel.
- For further details regarding the above, refer to the LEXUS GS430/300 Repair Manual.

### Tire Select Switch

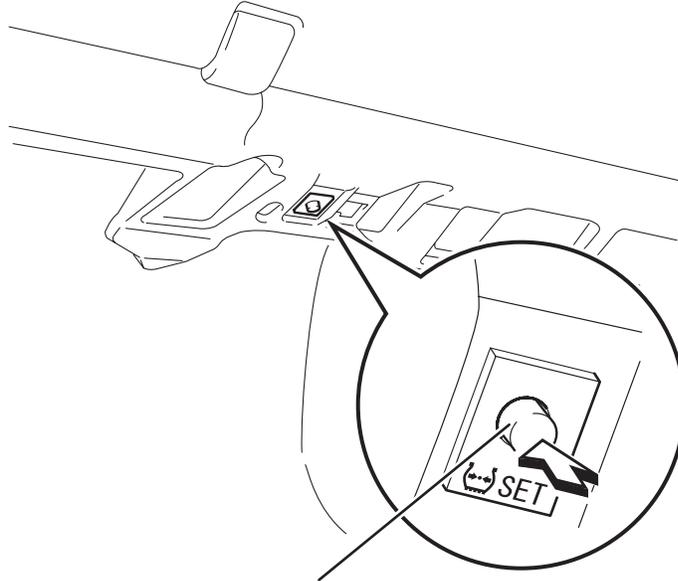
- This switch is located in the lower area of the instrument panel on the front passenger side.
- The transmitter IDs for two sets of tires can be registered in the control ECU. The driver can operate the tire selector switch to select one of the sets. Therefore, it is unnecessary to register the IDs each time tires are replaced.
- The IDs must be registered at a dealer.



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## Tire Pressure Warning Reset Switch

- The initialization switch is located in the lower area of the instrument panel on the driver's side.
- After adjusting the tire pressure to a set value, press the initialization switch. This will enable the system to issue a warning at a pressure in accordance with the set pressure.



Tire Pressure Warning Reset Switch

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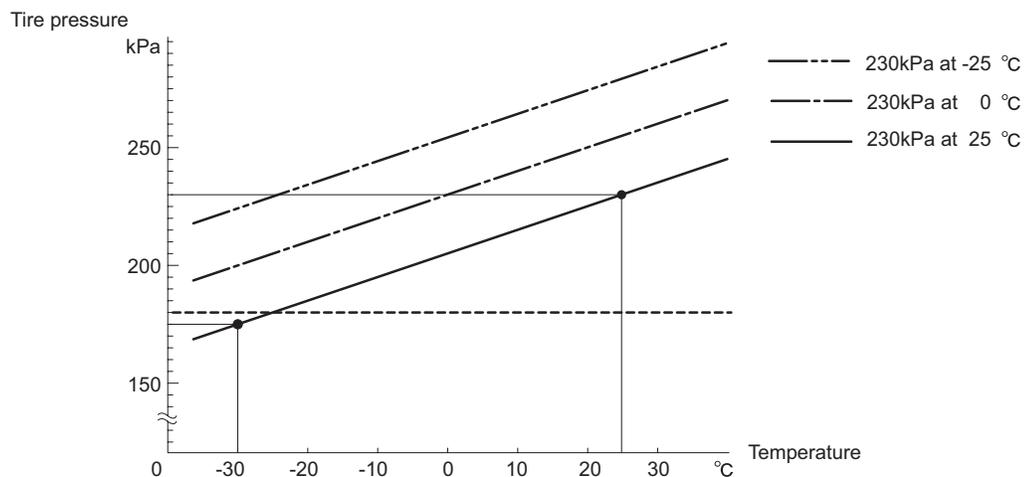
### Conditions requiring initialization:

At the time of new car delivery, change in tire size, replacement of pressure sensors, or driving with boosted pressure

#### ■ Service Tip ■

- The tire inflation pressure normally changes depending on the ambient temperature, as shown in the graph below.
- When adjusting the tire inflation pressure on GS430/300, it is possible to turn on the low pressure warning indicator light if you do not take if you do not take into consideration the ambient temperature.
- The tire pressure should be adjusted considering the ambient temperature (actual use condition) when it is adjusted in the workshop.

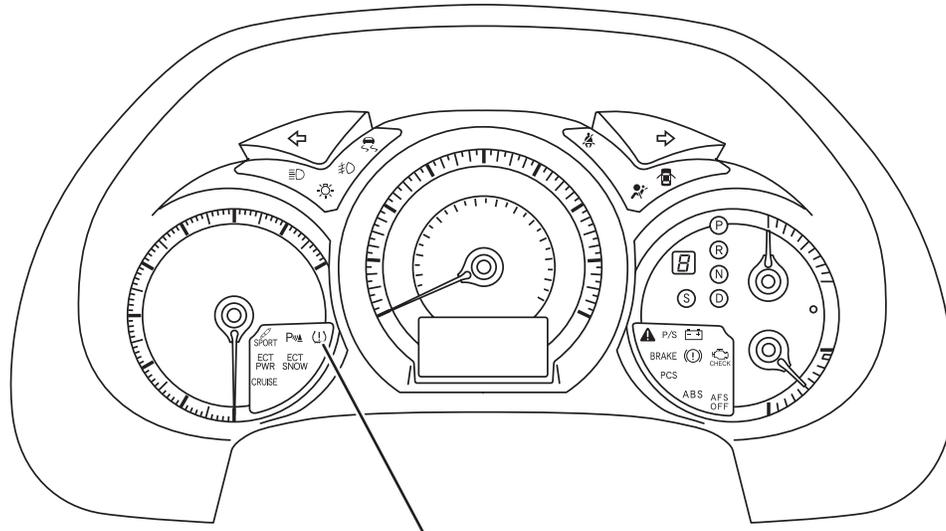
### Relationship between Tire Pressure and Temperature



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## Tire Pressure Warning Light

- The low tire pressure warning light is located in the combination meter.
- This warning light illuminates or blinks in accordance with signals from the tire pressure monitor receiver if the vehicles own tires are inflated with low pressure or if malfunction occurs in the system.



Low Tire Pressure Warning Light

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### Light Illumination Pattern

System Check (when system is normal)	Illuminates 3 seconds immediately after the ignition is ON; then it turns OFF.
Low Pressure Warning Illuminates	Illumination
System Failure	Blinks (or illuminates if there is an open circuit in the warning light)

### Diagnosis

- The new diagnostic system features improved serviceability. For details on the diagnostic methods and diagnostic items, refer to the repair manual.

### Fail Safe

- If a system failure occurs, the tire pressure warning light in the combination meter illuminates to inform the driver of the failure.

### Precautions on Tire Pressure Warning System

- If the tire pressure warning light illuminates, reduce the vehicle speed as soon as possible.
- Avoid making sudden steering or braking maneuvers because low-pressure tires could negatively affect handling and braking performance.
- The spare tire does not have a pressure sensor. The tire pressure warning light will remain illuminated when the spare tire is used.
- Make sure to use only the supplied valve caps (made of aluminum) on the pressure sensors & transmitters. If a metal cap (made of brass) is used, the cap could become seized.
- Do not use a flat tire sealant as it could cause the pressure sensor to malfunction.
- To protect the pressure sensor from damage, make sure to follow the instructions in the repair manual to dismount a tire from a wheel.
- Perform pre-driving inspections and regular inspections in the same manner as for ordinary vehicles.
- The system may not operate normally under the following conditions.

**Conditions in which the system may not operate normally:**

The vehicle is using tires that are not equipped with pressure sensors.
The vehicle is using tires equipped with pressure sensors, but the tire selector switch is selecting a different set of tires.
The batteries of the sensors are depleted.
The vehicle is located in the vicinity of a facility or equipment using a similar wireless frequency.
A large amount of snow or ice is attached to the vehicle, particularly around the wheels or wheel housings.
The vehicle is using non-genuine wheels.
Tire chains are attached to the tires.