NEW FEATURES

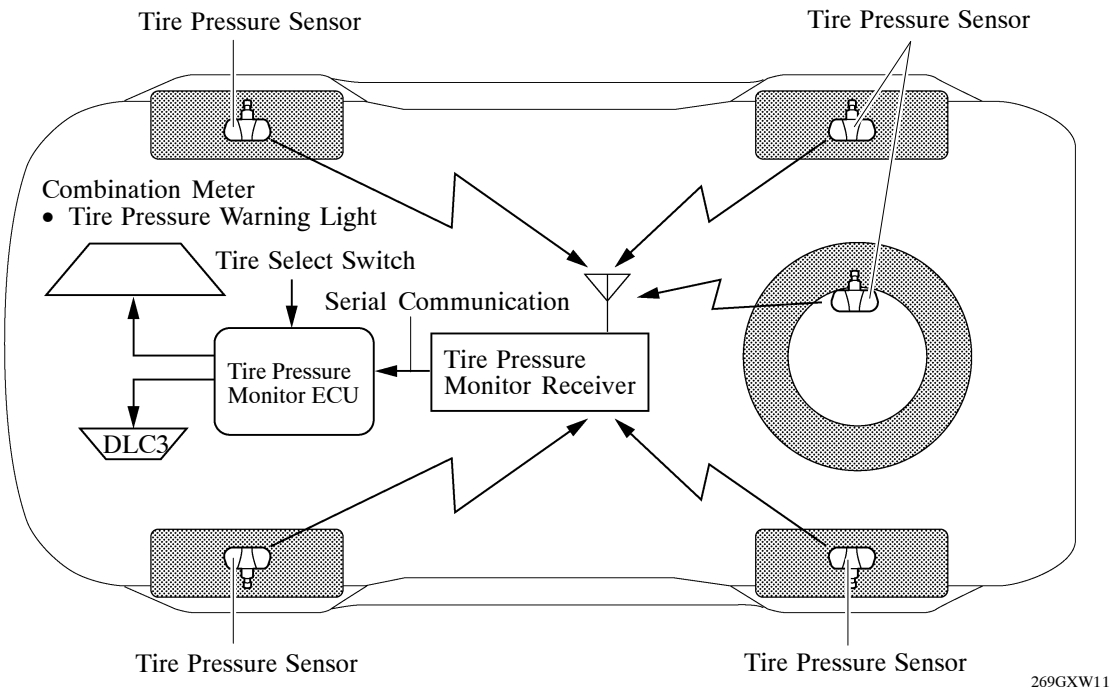
■TIRE PRESSURE WARNING SYSTEM

1. General

When the tire pressure warning system detects that a tire inflation pressure becomes lower than the threshold (185 kPa, 1.9 kgf/cm^2, 26.8 psi), it will turn ON the tire pressure warning light to warn the driver.

- This system can register main (normal) and 2nd (winter) tire sets in the tire pressure monitor ECU. The main or 2nd tires can be selected by pressing the tire select switch.
- The tire pressure monitor receiver receives the tire inflation pressure and the tire inside air temperature from the signals of five tire pressure sensors (including the spare tire) and transmits to the tire pressure monitor ECU.
- The tire pressure monitor ECU monitors the tire inflation pressure and detects the low tire inflation pressure.

▶ System Diagram ◀



Service Tip

When any of the tire pressure sensors or the tire pressure monitor ECU are replaced and tire pressure sensors for the second set of tires are added, the ID numbers of the tire pressure sensors must be registered. These procedures can be performed on a hand-held tester.
For details, see the 2004 LEXUS GX470 Repair Manual (Pub. No. RM1058U).

2. Major Difference

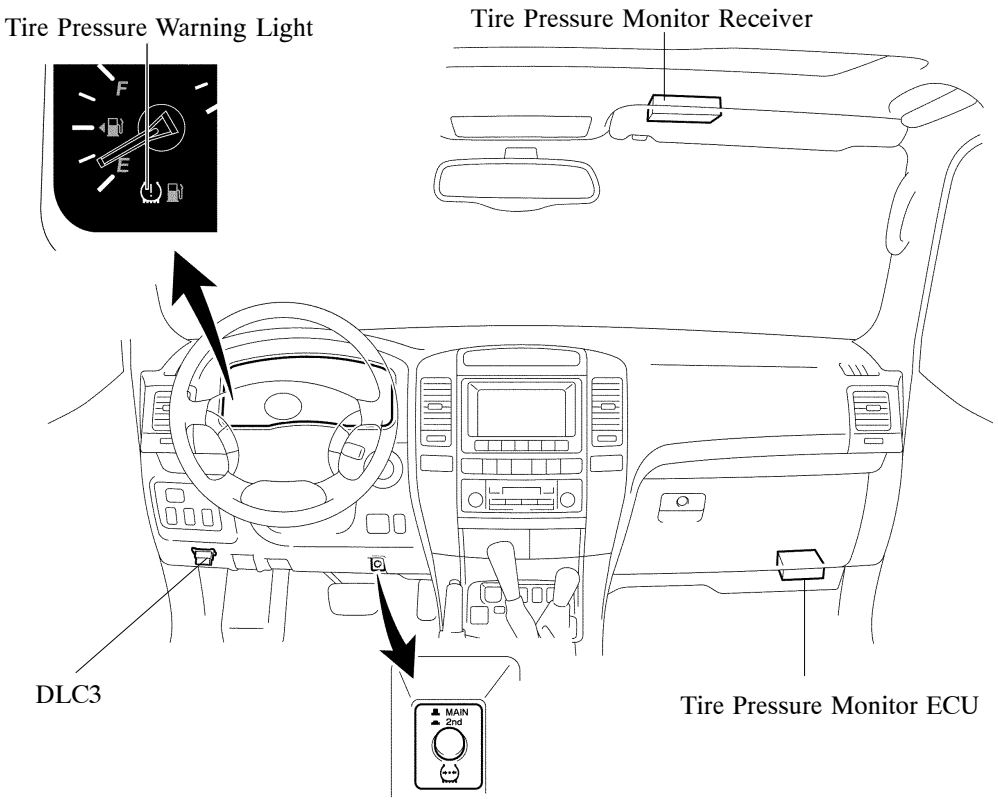
From Tire Pressure Warning System in SC430

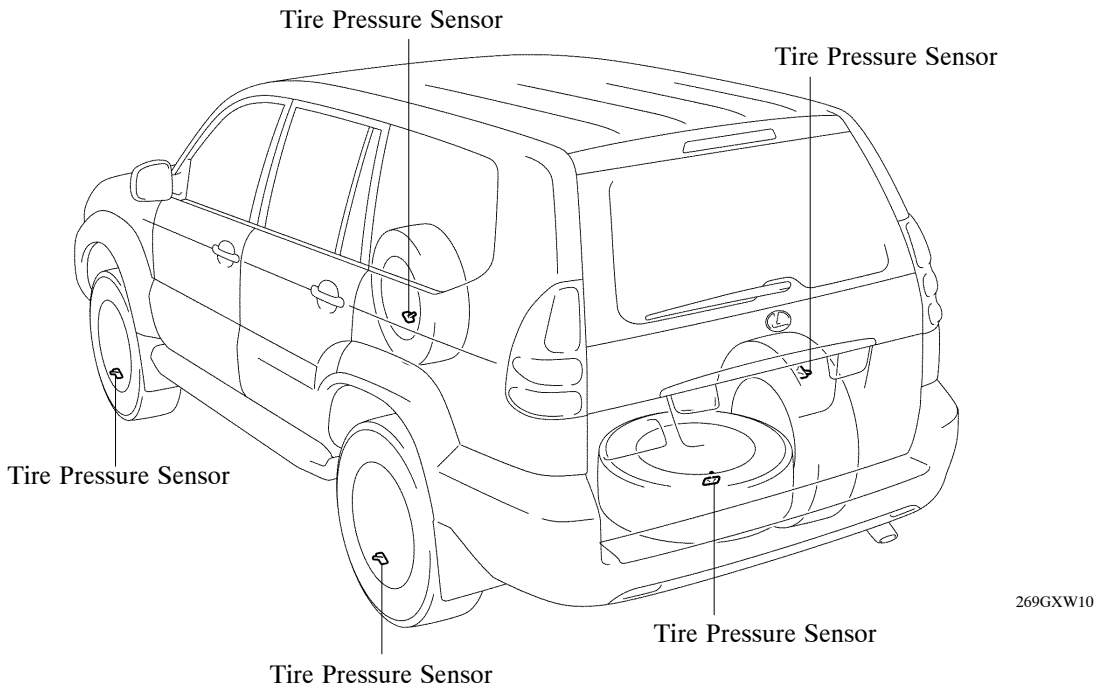
Item	Change
Warning Method	• Warning method has been changed from the tire pressure warning light and the buzzer to the tire pressure warning light only. • The condition that the tire warning light blinks has been changed as follows. SC430: The tire pressure monitor ECU detects that a tire inflation pressure decreases to 100 kPa (1.0 kgf/cm^2, 14.5 psi) or less. GX470: The tire pressure monitor ECU detects a malfunction in the system.
Antenna	• An antenna has been changed from four to one. • An antenna has been included to tire pressure monitor receiver.
Tire Pressure Sensor	• The tire pressure sensor has been made more lightweight and compact. (Weight: 48 g → 34 g) • Four ID mark colors (White, Blue, Red, Gold) have been discontinued and Seven-digit ID numbers have been written on the sensor.
Tire Pressure Monitor Receiver	A tire pressure monitor receiver has been integrated with antenna.
Tire Pressure Monitor ECU	• Tire pressure monitor ECU has been separated from the tire pressure monitor receiver. • The monitoring tire has been changed from four to five (including the spare tire).
Diagnosis	• The test mode function has been added for serviceability. • Some DTCs (Diagnostic Trouble Codes) have been added and some discontinued. For details, see page 31.
Registration Method	Registration method for the tire pressure sensor has been changed from automatic to manual.

From Tire Pressure Warning System in RX330

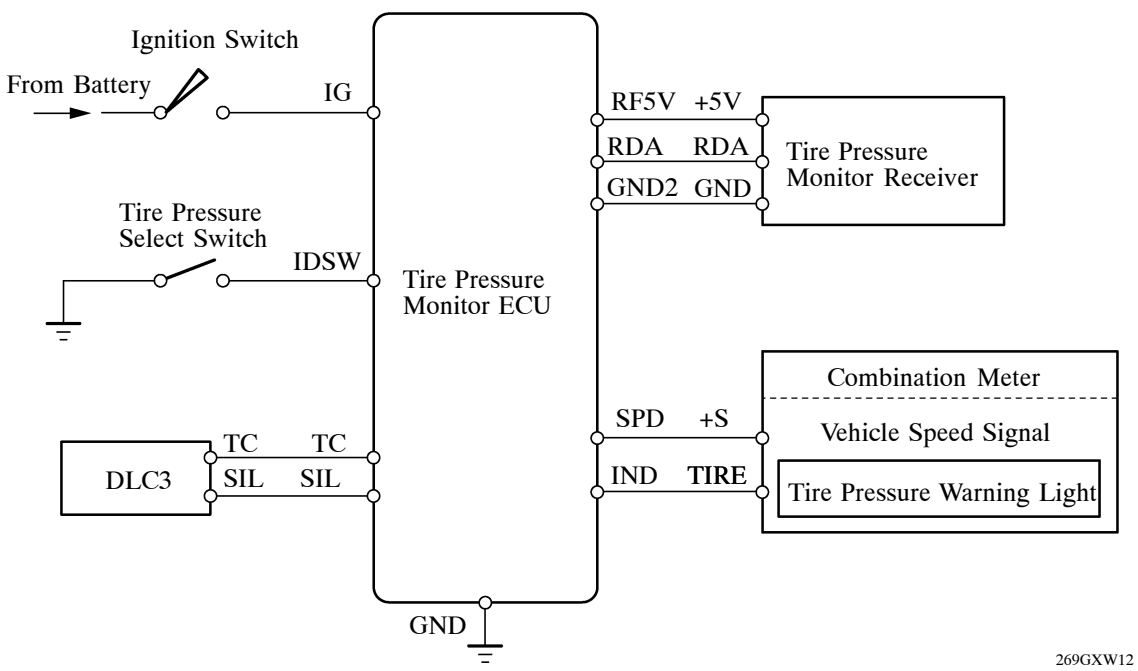
System is direct-sensing type (GX470, SC430) and indirect-sensing type (RX330).

3. Layout of Main Component





4. Wiring Diagram



5. Function of Main Component

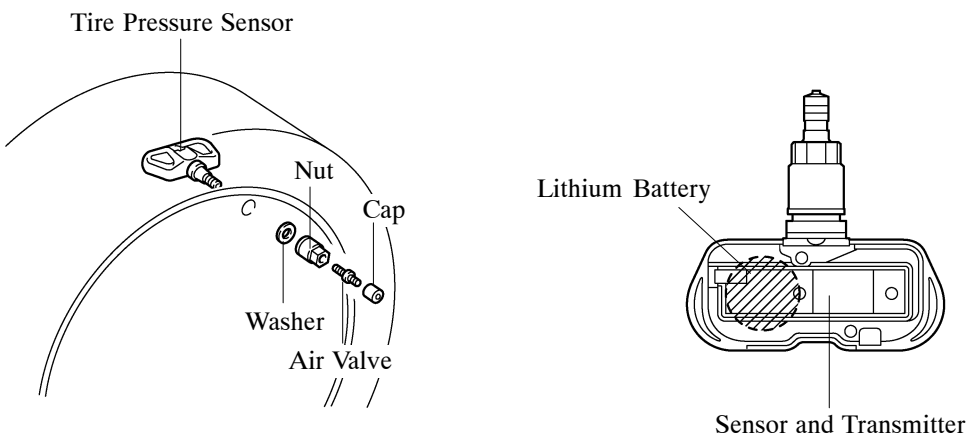
Component		Outline
Combination Meter		Transmits the vehicle speed signal for vehicle speed correction to the tire pressure monitor ECU.
	Tire Pressure Warning Light	• Turns ON or blinks to warn the driver in accordance with the signal from the tire pressure monitor ECU. • Displays the 2-digit DTC (Diagnostic Trouble Codes).
Tire Select Switch		Transmits the main or 2nd switching signal to the tire pressure monitor ECU.
Tire Pressure Sensor (5)		Detects the inflation pressure and internal temperature of the tire and transmits the measured value and the ID number to the tire pressure monitor receiver.
Tire Pressure Monitor Receiver		Receives the tire pressure sensor signal and transmits this data to the tire pressure monitor ECU.
Tire Pressure Monitor ECU		• Receives on the data from the tire pressure monitor receiver and monitors the tire inflation pressure. • When the tire pressure monitor ECU detects a drop in the tire inflation pressure or a system malfunction, it outputs the respective signal to the combination meter. • Switches the main or 2nd tire mode in accordance with the tire select switch signal.

6. Construction and Operation

Tire Pressure Sensor

The tire pressure sensor is integrated in the air valve of a disc wheel. This sensor consists of the lithium battery, sensor and transmitter.

- If the battery voltage drops, the sensors will be unable to transmit signals, which cause a DTC (Diagnostic Trouble Codes) to be output.
- The sensor directly measures tire inflation pressure and tire inside air temperature.
- The transmitter transmits these measured values to the tire pressure monitor receiver at 314.98 MHz.



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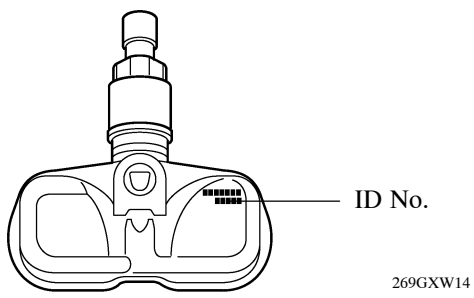
Service Tip

- If the lithium battery is depleted, replace the tire pressure sensor.
- Make sure to install the tire pressure sensor in the wheel in accordance with the prescribed procedure. Failure to do so could result in the incorrect measurement of the tire inflation pressure.
- A new tire pressure sensor is in the sleep mode to prevent the battery from depleting. When the pressure in the detection portion of the tire pressure sensor increases or decreases by 40 kPa (0.4 kgf/cm^2, 5.8 psi) within 30 sec., the tire pressure sensor automatically cancels the sleep mode. Once the sleep mode is canceled, the tire pressure sensor cannot revert to the sleep mode.
- The ID number is written on the sensor.



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7. Initial Check

After the ignition switch is tuned ON, the tire pressure monitor ECU lights up the low tire pressure warning light for three seconds to check the warning light circuits.

8. Warning Operation

The tire pressure monitor ECU has two warning method in accordance with detection condition.

Warning Method	Detection Condition
The tire pressure warning light turns ON.	• The tire pressure monitor ECU detects that a tire inflation pressure decreases in 185 kPa (1.9 kgf/cm^2, 26.8 psi) or less. • The meter ECU in the combination meter detects that a tire pressure warning light circuit open.
The tire pressure warning light blinks.	The tire pressure monitor ECU detects a malfunction in the system.

- If the warning light turns ON, it can be turned OFF by raising the tire inflation pressure to 202.5 kPa (2.1 kgf/cm^2, 29.3 psi).
- If the warning light blinks, it can be turned OFF by repairing the malfunction in the system.

9. Diagnosis

If the tire pressure monitor ECU detects malfunction in the system, the tire pressure monitor ECU makes the tire pressure warning light blink to warn the driver and stores the DTC (Diagnostic Trouble Codes) in memory.

- The 5-digit DTC can be read by connecting a hand-held tester to the DLC3 terminal.
- The 2-digit DTC can be read that by connecting the SST (09843-18040) to the Tc and CG terminals of the DLC3 and the blinking of the tire pressure warning light.
- The test mode can be switch by connecting a hand-held tester to the DLC3 terminal.

For details, see the 2004 LEXUS GX470 Repair Manual (Pub. No. RM1058U).

— Changed (from SC430) —
The following DTCs have been added or discontinued from SC430:

▶ Added DTC ◀

DTC No.		Detection Item	DTC No.		Detection Item
2-digit	5-digit		2-digit	5-digit	
15	C2115	Transmitter ID5 operation stop	67	C2167	Abnormality of inside temperature in ID3 tire
21	C2121	Transmitter ID1 not received (Main)	68	C2168	Abnormality of inside temperature in ID4 tire
22	C2122	Transmitter ID2 not received (Main)	69	C2169	Abnormality of inside temperature in ID5 tire
23	C2123	Transmitter ID3 not received (Main)	71	C2171	Transmitter ID not registered (Main)
24	C2124	Transmitter ID4 not received (Main)	72	C2172	Transmitter ID not registered (2nd)
25	C2125	Transmitter ID5 not received (Main)	76	C2176	Receiver error
31	C2131	Transmitter ID1 not received (2nd)	81	C2181	Transmitter ID1 not received (test diagnosis)
32	C2132	Transmitter ID2 not received (2nd)	82	C2182	Transmitter ID2 not received (test diagnosis)
33	C2133	Transmitter ID3 not received (2nd)	83	C2183	Transmitter ID3 not received (test diagnosis)
34	C2134	Transmitter ID4 not received (2nd)	84	C2184	Transmitter ID4 not received (test diagnosis)
35	C2135	Transmitter ID5 not received (2nd)	85	C2185	Transmitter ID5 not received (test diagnosis)
45	C2145	Transmitter ID5 error	91	C2191	Vehicle speed signal error (test diagnosis)
65	C2165	Abnormality of inside temperature in ID1 tire	92	C2192	Select switch error (test diagnosis)
66	C2166	Abnormality of inside temperature in ID2 tire	—	—	—

▶ **Discontinued DTC** ◀

DTC No.		Detection Item	DTC No.		Detection Item
2-digit	5-digit		2-digit	5-digit	
16	C2116	Transmitter ID1 not received	56	C2156	Transmitter ID1 voltage drop
17	C2117	Transmitter ID2 not received	57	C2157	Transmitter ID2 voltage drop
18	C2118	Transmitter ID3 not received	58	C2158	Transmitter ID3 voltage drop
19	C2119	Transmitter ID4 not received	59	C2159	Transmitter ID4 voltage drop

10. Precaution for Tire Pressure Warning System Operation

If any of the conditions listed below exists, the tire pressure warning system may not operate properly.

- The areas, facilities or devices that use similar radio frequencies are located in vicinity of the vehicle.
- A radio device of similar frequency is used in the vehicle.
- A lot of snow or ice is stuck to the vehicle, especially onto the wheels and around the wheel houses.
- The battery of the sensor has been depleted.
- The tires without tire pressure sensor are used.
- Non-genuine TOYOTA wheels are used.
- Tire chains are used.
- Although the tires with tire pressure sensors are used, another tire set has been selected by the tire select switch.