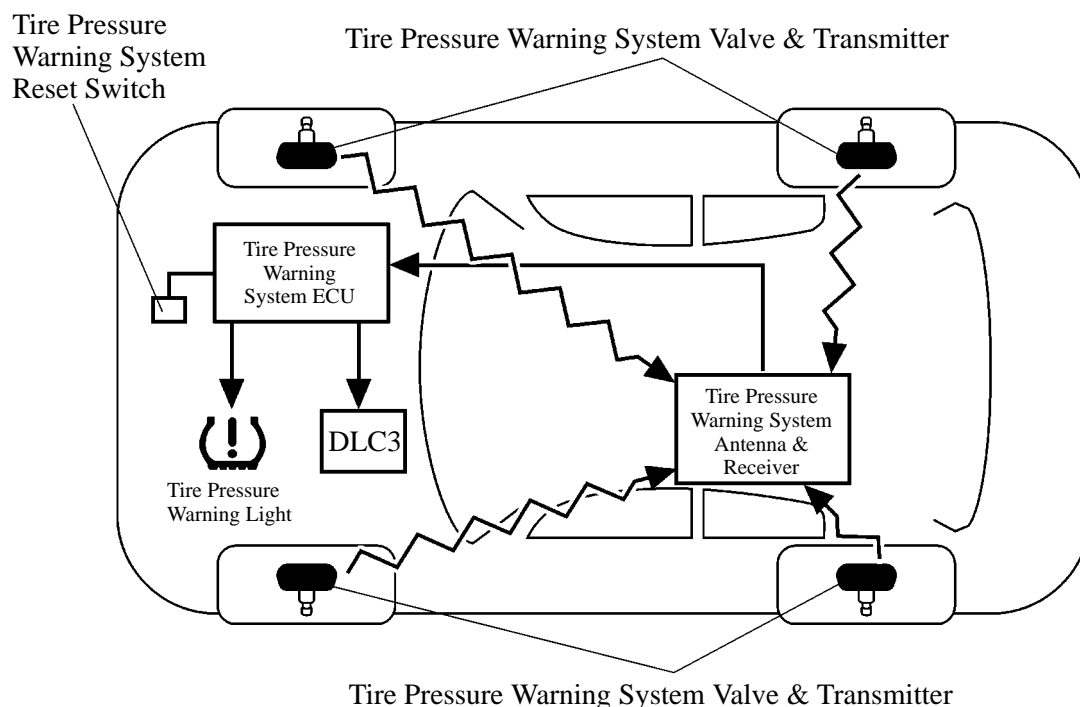


TIRE PRESSURE WARNING SYSTEM

DESCRIPTION

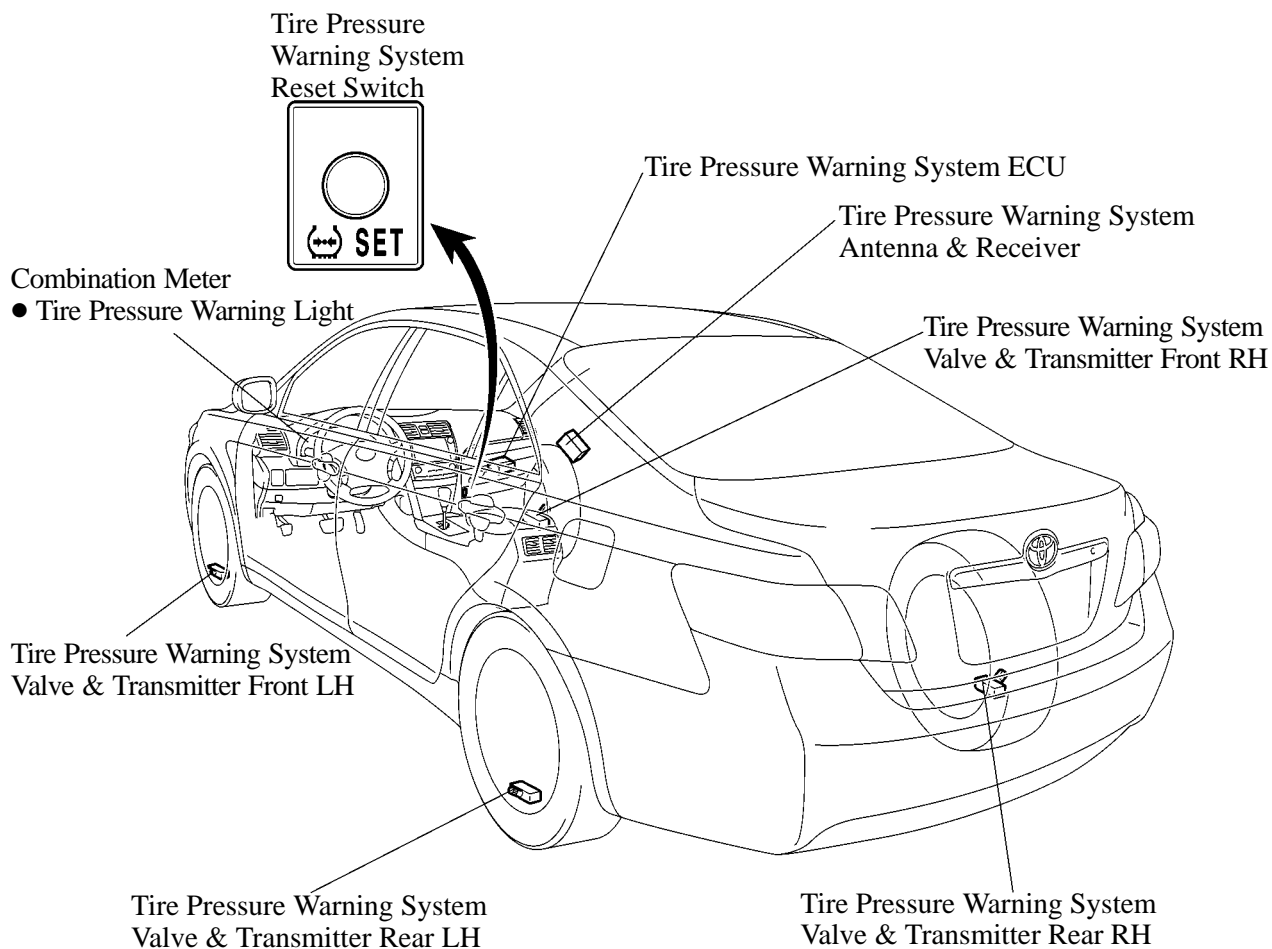
- A direct-sensing type tire pressure warning system is used on U.S.A. model.
- If the vehicle continues to be driven with 1 or more of the 4 inflated to a low air pressure that could cause problems during driving, this system will illuminate the tire pressure warning light to inform the driver of the low air pressure.
- Furthermore, this system directly senses the air pressure of each tire through tire pressure warning system valve & transmitter that are attached to each wheel.
- After tire replacement, firstly register tire pressure warning system valve & transmitter IDs into the tire pressure warning system ECU, and then store the appropriate tire pressure in the ECU using the tire pressure warning system reset switch.

► System Diagram ◀



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■ LAYOUT OF MAIN COMPONENTS



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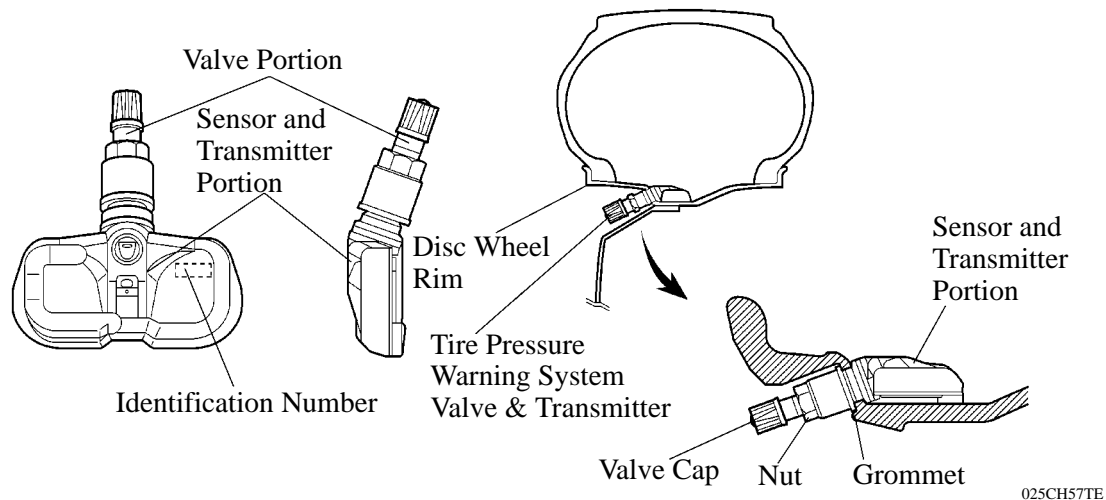
■ FUNCTION OF MAIN COMPONENTS

Component	Outline
Combination Meter	Transmits the vehicle speed signal to the tire pressure warning system ECU for vehicle speed correction.
Tire Pressure Warning Light	<ul style="list-style-type: none"> ● Turns ON or blinks to warn the driver in accordance with the signal from the tire pressure warning system ECU. ● Displays the 2-digit DTC (Diagnostic Trouble Code).
Tire Pressure Warning System Reset Switch	The appropriate air pressures of the tires currently mounted on the vehicle are stored in the tire pressure warning system ECU by operating the tire pressure warning system reset switch.
Tire Pressure Warning System Valve & Transmitter	Detects the inflation pressure and internal temperature of the tire and transmits the measured value and the ID number to the tire pressure warning antenna & receiver.
Tire Pressure Warning System Antenna & Receiver	Receives the tire pressure warning system valve & transmitter signal and transmits this data to the tire pressure warning system ECU.
Tire Pressure Warning System ECU	<ul style="list-style-type: none"> ● Receives the data from the tire pressure warning system antenna & receiver and monitors the tire inflation pressure. ● When the tire pressure warning system ECU detects a drop in the tire inflation pressure or a system malfunction, it outputs the respective signal to the combination meter.

■ CONSTRUCTION AND OPERATION

1. Tire Pressure Warning System Valve & Transmitter

- The tire pressure warning system valve & transmitter is integrated in the air valve of a disc wheel. It measures the pressure and the temperature of the air in the tire and transmits the measured values and a recognition ID to the tire pressure warning system valve & transmitter.
- If the battery voltage drops, the tire pressure warning system valve & transmitter assembly must be replaced. Furthermore, if the battery voltage drops, the tire pressure warning system valve & transmitter will be unable to transmit signals, which causes a DTC to be output.
- Tire pressure warning system valve & transmitter with 4 different ID code range are used on one vehicle.
- Each tire pressure warning system valve & transmitter has a built-in semi-conductor to directly measure the inflation pressure of the tire.
- Frequency of the tire pressure warning system valve & transmitter is 314.98 MHz.



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NOTICE

- Ensure the proper direction of the tire pressure warning system valve & transmitter by adhering to the prescribed procedure for installing a tire pressure warning system valve & transmitter on a wheel. Failure to do so could result in an incorrect measurement of the tire air inflation pressure.
- Make sure to replace the tires in accordance with the prescribed procedure. To prevent the tire pressure warning system valve & transmitter from damage, drop the tire pressure warning system valve & transmitter into the wheel before removing the tire. Failure to do so could damage the tire pressure warning system valve & transmitter.

For further details regarding the above, see the 2007 Camry Hybrid Vehicle Repair Manual (Pub. No RM02H0U).

Service Tip

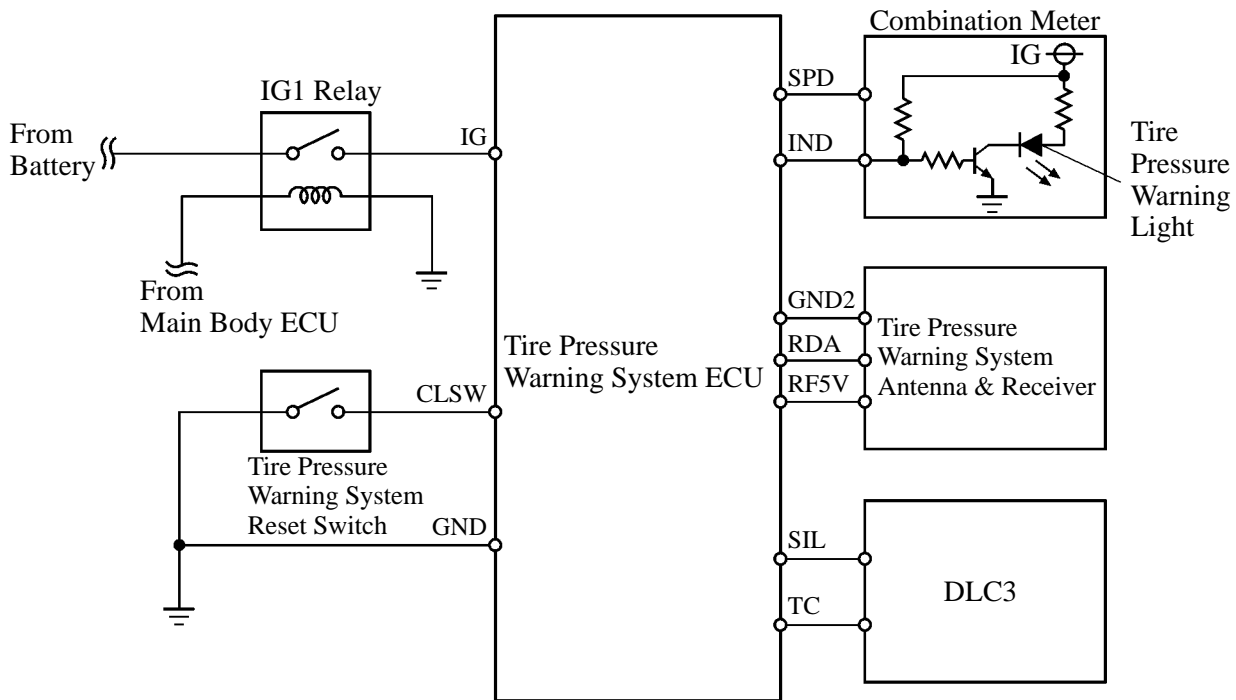
- If the lithium battery is depleted, replace the entire tire pressure warning system valve & transmitter assembly.
- After a tire pressure warning system valve & transmitter has been replaced, the ID of the tire pressure warning system valve & transmitter must be registered in the ECU. To register an ID, use a hand-held tester to enter the ID code that is indicated on the sensor.
- When replacing the tire pressure warning system valve & transmitter, all the separate ID codes of the 4-tire pressure warning system valve & transmitter must be registered. Even if only 1 tire pressure warning system valve & transmitter is replaced, the ID codes of all 4 tire pressure warning valve & transmitter must be registered again.
- A new tire pressure warning system valve & transmitter that is available as a service part is in the sleep mode in its initial state, to prevent the battery from depleting. During PDS (Pre-Delivery Service), after the tire pressure warning system valve & transmitter 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, see the 2007 Camry Hybrid Vehicle Repair Manual (Pub. No. RM02H0U).

2. Tire Pressure Warning System Antenna & Receiver and Tire Pressure Warning System ECU

- The tire pressure warning system antenna & receiver, receives the radio wave signals from the tire pressure warning system valve & transmitter and transmits those signals to the tire pressure warning ECU.
- The tire pressure warning system antenna & receiver receives the tire inflation pressure data and sensor identification data.
- The tire pressure warning system antenna & receiver can determine from the received data whether the signals came from its own tires.

► Wiring Diagram ◀



3. Tire Pressure Warning System Reset Switch

- By operating the tire pressure warning system reset switch, tire pressure warning system ECU can be set to issue a warning at an inflation pressure that corresponds with the type of tires. Therefore, the dealer must set the warning threshold to the proper value in order to comply with the local regulations.
- Operate the tire pressure warning system reset switch only after the inflation pressures of all 4 tires have been adjusted on the vehicle.
- To initialize the system, press and hold the tire pressure warning system reset switch for 3 seconds or longer with the power switch turned IG-ON. When starting the initialization, the tire pressure warning light blinks 3 times at 0.5 Hz.
- During the initialization, the tire pressure warning system valve & transmitter measures the inflation pressure of the tires, and registers the signals that are transmitted into the ECU at a frequency of 1 per minute. The initialization process is completed when the signals from the tires have been received.
- Once the tire pressure warning system reset switch has been pressed, turning OFF the power switch is not recommended for a few minutes.

Service Tip

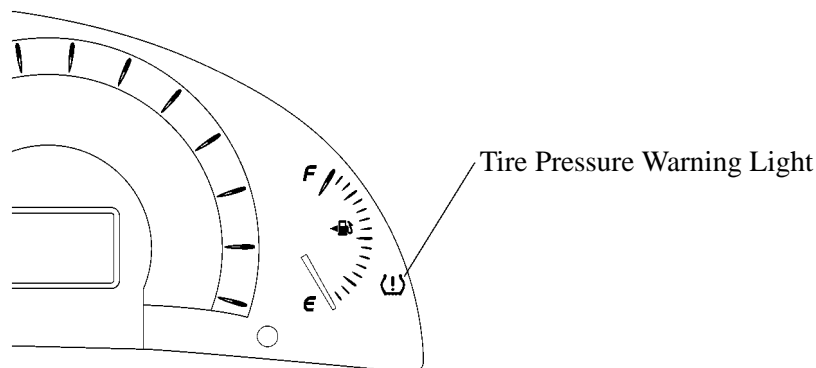
- Since the initialized values are dependent upon the accuracy of the tire pressure gauge to be used, use a tire pressure gauge that has been properly calibrated.
- The system must be initialized in the following conditions:
 - 1) New vehicle delivery
 - 2) Replacement with tires of different size (inflation pressure)
 - 3) Tire pressure warning system ECU replacement

CAUTION

If the system is initialized with tires whose inflation pressure deviates from the threshold pressure, the system can be initialized at those values. Therefore, initialize only after the tires have been inflated to the specified air pressure.

4. Tire Pressure Warning Light

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



5. Self-Diagnosis

If malfunctions are detected in the system, the tire pressure warning system ECU warns the driver by illuminating the tire pressure warning light after blinking it at 1 Hz intervals for 1 minute, and stores the DTC (Diagnostic Trouble Code) in the memory.

The DTC that are stored by the tire pressure warning system ECU can be accessed by connecting the SST (09843-18040) to the DLC3 terminals TC and CG, and reading the blinking of the tire pressure warning light. They can also be accessed by connecting a hand-held tester. The table below lists the DTC that pertain to this system. For further details, see the 2007 Camry Hybrid Vehicle Repair Manual (Pub No. RM02H0U).

Service Tip

After the DTC have been detected, it is necessary to identify the wheel that contains the faulty tire pressure warning system valve & transmitter. It can be identified by performing the operation in accordance with the prescribed procedure. For details, see the 2007 Camry Hybrid Vehicle Repair Manual (Pub. No. RM02H0U).

DTC No.	Detection Item	DTC Deletion Condition
C2111/11	Tire pressure warning system valve & transmitter ID1 operation stop (sleep mode)	When data is received from a transmitter with an ID code that is registered in the ECU, or the ID code of the tire pressure warning system valve & transmitter is newly registered in the ECU.
C2112/12	Tire pressure warning system valve & transmitter ID2 operation stop (sleep mode)	
C2113/13	Tire pressure warning system valve & transmitter ID3 operation stop (sleep mode)	
C2114/14	Tire pressure warning system valve & transmitter ID4 operation stop (sleep mode)	
C2121/21	Data from tire pressure warning system valve & transmitter registered to ID1 not received	When a DTC deletion operation is implemented or the ID code of the tire pressure warning valve & transmitter is newly registered in the ECU.
C2122/22	Data from tire pressure warning system valve & transmitter registered to ID2 not received	
C2123/23	Data from tire pressure warning system valve & transmitter registered to ID3 not received	
C2124/24	Data from tire pressure warning system valve & transmitter registered to ID4 not received	
C2141/41	A malfunction in the tire pressure warning system valve & transmitter registered to ID1	
C2142/42	A malfunction in the tire pressure warning system valve & transmitter registered to ID2	
C2143/43	A malfunction in the tire pressure warning system valve & transmitter registered to ID3	
C2144/44	A malfunction in the tire pressure warning system valve & transmitter registered to ID4	
C2165/65	Abnormal temperature inside ID1 tire	
C2166/66	Abnormal temperature inside ID2 tire	
C2167/67	Abnormal temperature inside ID3 tire	
C2168/68	Abnormal temperature inside ID4 tire	
C2171/71	Tire pressure sensor ID not registered	
C2176/76	Tire pressure warning system antenna & receiver is error	
C2177/77	Initialization incomplete	

(Continued)

DTC No.	Detection Item	DTC Deletion Condition
C2181/81	Data from tire pressure warning system valve & transmitter registered to ID1 not received (test diagnosis)	When deletion conditions of the ID codes have been established or departing from the test mode.
C2182/82	Data from tire pressure warning system valve & transmitter registered to ID2 not received (test diagnosis)	
C2183/83	Data from tire pressure warning system valve & transmitter registered to ID3 not received (test diagnosis)	
C2184/84	Data from tire pressure warning system valve & transmitter registered to ID4 not received (test diagnosis)	
C2191/91	Vehicle speed signal error (test diagnosis)	