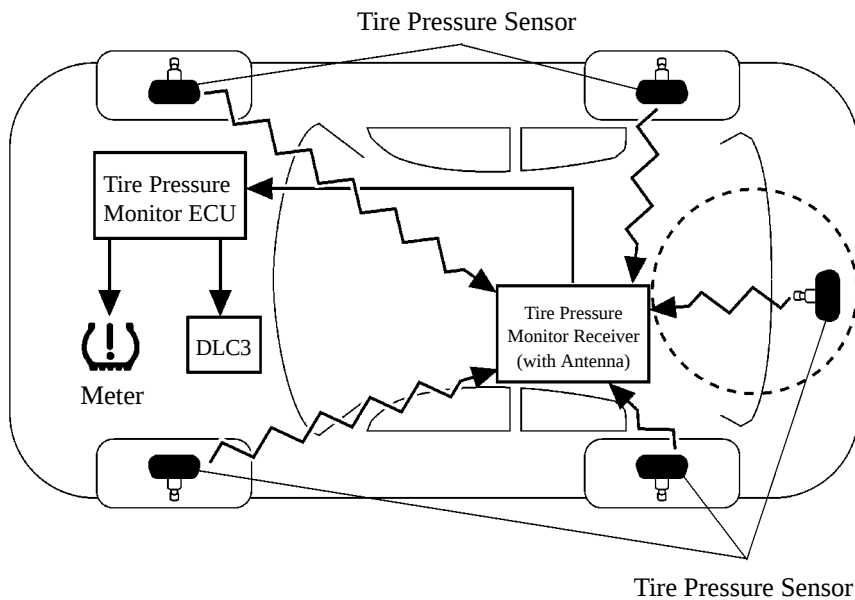


■ TIRE PRESSURE WARNING SYSTEM

1. General

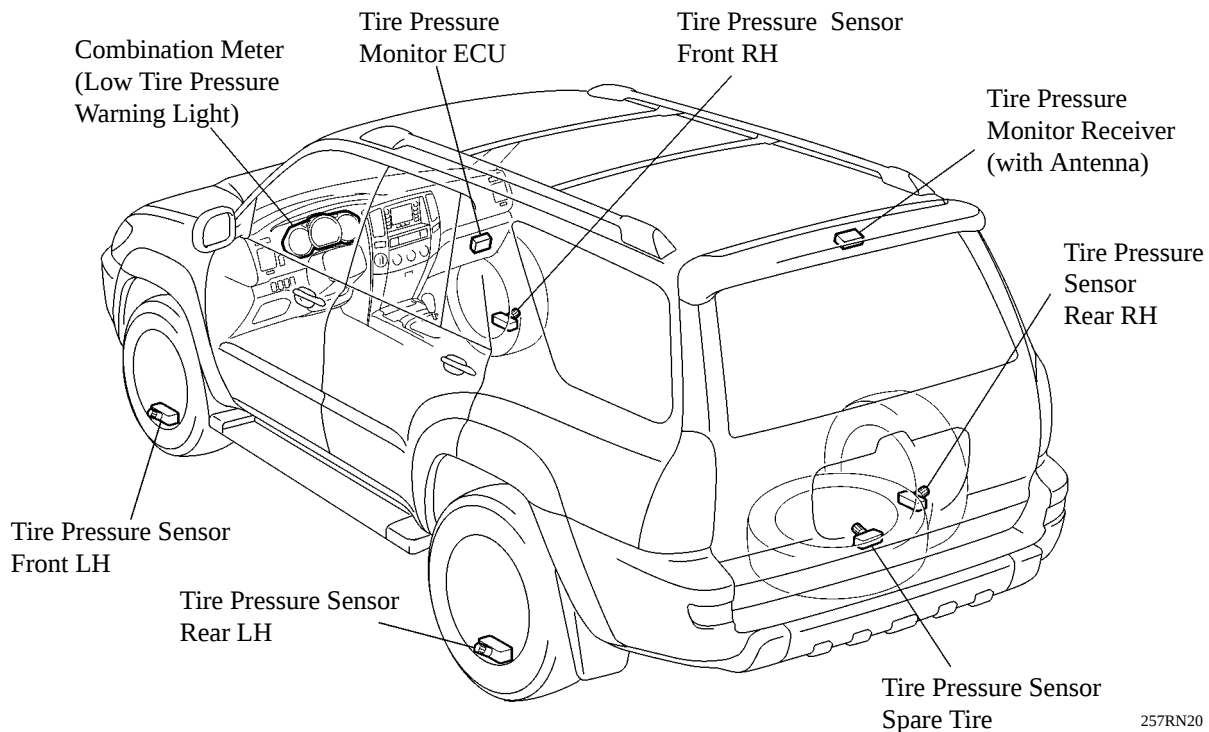
- A direct-sensing type tire pressure warning system has been newly adopted as standard equipment on all '04 4Runner models.
- If the vehicle continues to be driven with one or more of the five tires (which includes the spare tire) inflated to a low air pressure that could cause problems in driving, 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.

► System Diagram ◀



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► Layout of Main Components ◀

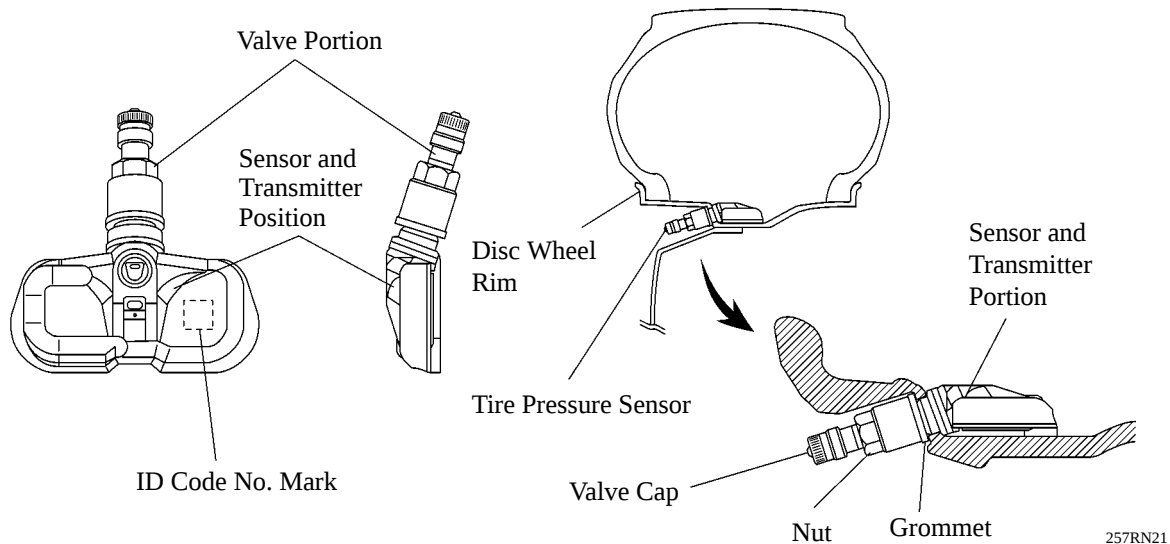


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2. Construction and Operation

Tire Pressure Sensor

- The tire pressure sensor 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 monitor receiver.
- If the battery voltage drops, the tire pressure sensor assembly must be replaced. Furthermore, if the battery voltage drops, the sensor will be unable to transmit signals, which causes a DTC to be output.
- Sensor with five 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.
- Frequency of the sensor is 314.98 MHz.



NOTICE

- Ensure the proper direction of the sensor by adhering to the prescribed procedure for installing a tire pressure sensor 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 sensor from damage, drop the sensor into the wheel before removing the tire. Failure to do so could damage the tire pressure sensor.

For further details regarding the above, refer to the 2004 4Runner Repair Manual (Pub. No.RM1059U).

Service Tip

- If the lithium battery is depleted, replace the entire tire pressure sensor assembly.
- After a sensor has been replaced, the ID of the sensor must be registered in the ECU. To register an ID, use an intelligent tester to enter the ID code that is indicated on the sensor.
- When replacing the tire pressure sensors, all the separate ID codes of the five sensors must be registered. Even if only one sensor is replaced, the ID codes of all five sensors must be registered again.
- 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. During PDS (Pre-Delivery Service), 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. Keep the air pressure of the spare tire the same as the set air pressure amount of the front and rear tires.

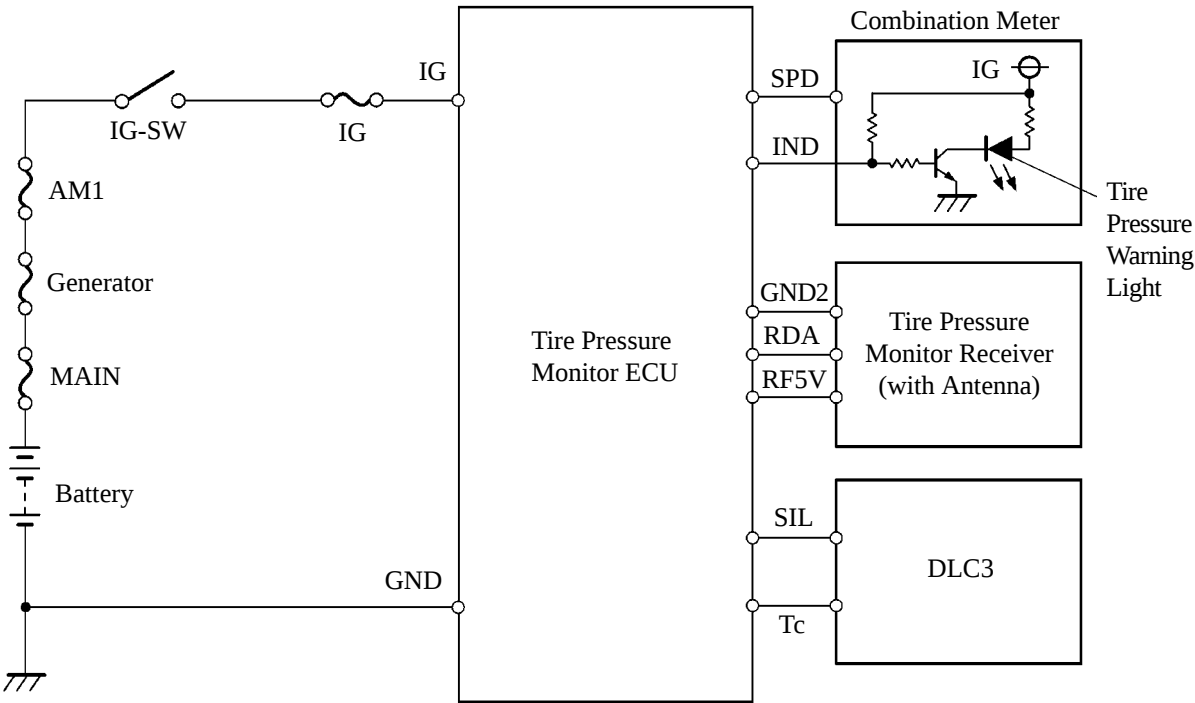
For further details regarding the above, refer to the 2004 4Runner Repair Manual (Pub. No.RM1059U).

Tire Pressure Monitor Receiver and Tire Pressure Monitor ECU

- The tire pressure monitor receiver, which contains an antenna, receives the radiowave signals from the tire pressure sensors and transmits those signals to the tire pressure monitor ECU.
- The tire pressure monitor receiver receives the tire inflation pressure data and sensor identification data.
- The tire pressure monitor receiver can determine from the received data whether the signals came from its own tires.
- If the received tire inflation signal is below approx. 185 kPa (approx. 26.8 psi), the tire pressure monitor ECU illuminates the tire monitoring warning light.
- On tire pressure monitor receiver, the numbers of ID1, ID2, ID3, ID4 and ID5 are allotted as the information to recognize each tire (tire pressure sensor) on the initial condition.
- The tire pressure monitor receiver exchanges required information by tire pressure monitor ECU. Information in this system that is transmitted or received is listed in the table below.

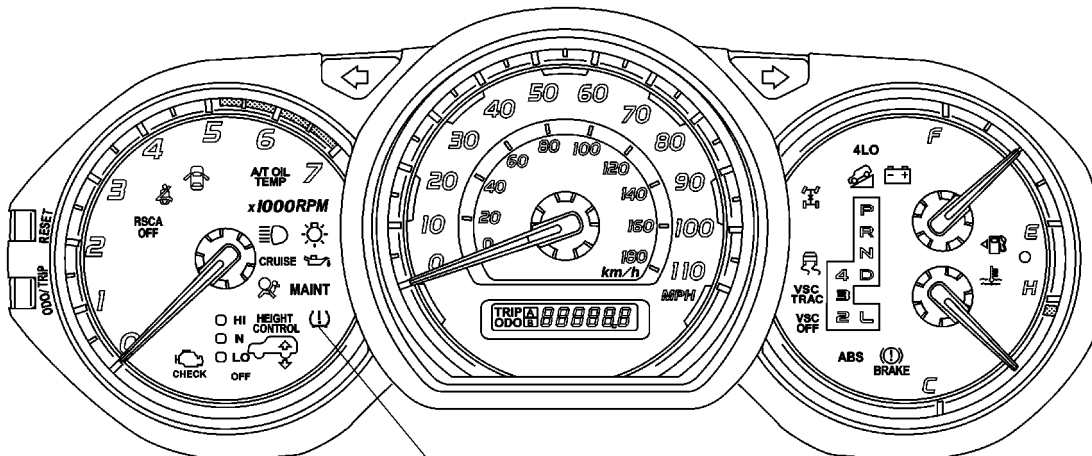
Information		From/To
Input Signal	Vehicle speed signal	Combination Meter
	Ignition switch signal	ECM
Output Signal	• Low tire pressure warning light illumination signal • Low tire pressure warning light blinking signal	Combination meter
	DTCs (Diagnostic Trouble Codes) signal	Data Link Connector 3

► Wiring Diagram ◀



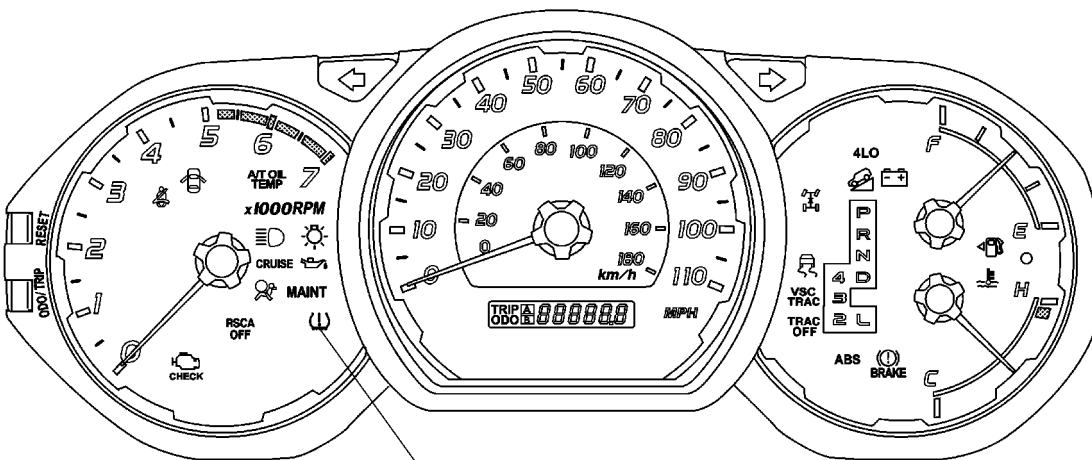
Low Tire Pressure Warning Light

- 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

Limited Grade model



Low Tire Pressure Warning Light

SR5 Grade model

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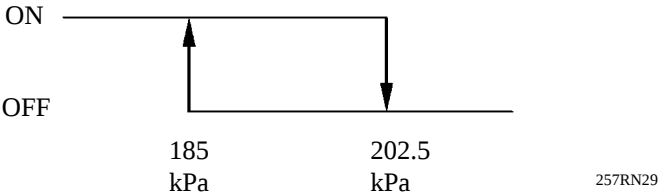
Warning Operation

If condition such as shown in the table below occurs as a result of receiving the tire inflation pressure data from the tire pressure sensors, the tire pressure monitor ECU alerts the driver through the warning light.

Tire Inflation Pressure	Warning Light
220 kPa (31.9 psi) (Standard)	—
Less Than Approx. 185 kPa (Approx. 26.8 psi) (Warning)	Illumination
Tire pressure warning system malfunction	Blinking

Service Tip

- This warning light illuminates when the ignition switch is turned ON, and goes OFF after 3 seconds if the system is normal. If the warning light does not turn OFF, it is necessary to check the condition of the tires. If there is no malfunction with the tires, there may be a malfunction in the system. In this case, check DTCs.
- Because the warning light alerts the driver regardless of which of the tires has a low pressure, it is necessary to check all the tires in case of low pressure.
- As this warning system has the hysteresis in the transition of the tire inflation pressure, in case of raising the tire inflation pressure, the warning light will not change unless raising it rather higher than the standard value.



Self-Diagnosis

If malfunction is detected in the system, the tire pressure monitor ECU illuminates the tire pressure warning light to alert the driver and stores the DTCs (Diagnostic Trouble Codes) in the memory.

The DTCs that are stored by the tire pressure monitor 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 DTCs that pertain to this system. For further details, see the 2004 4Runner Repair Manual (Pub No. RM1059U).

Service Tip

After the DTCs have been detected, it is necessary to identify the wheel that contains the faulty tire pressure sensor. It can be identified by performing the operation in accordance with the prescribed procedure. For details, refer to the 2004 4Runner Repair Manual (Pub. No. RM1059U)

DTC No.	Detection Item	DTC Deletion Condition
C2111/11	Tire pressure sensor 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 sensor is newly registered in the ECU.
C2112/12	Tire pressure sensor ID2 operation stop. (sleep mode)	
C2113/13	Tire pressure sensor ID3 operation stop. (sleep mode)	
C2114/14	Tire pressure sensor ID4 operation stop. (sleep mode)	
C2115/15	Tire pressure sensor ID5 operation stop. (sleep mode)	
C2121/21	Tire pressure sensor ID1 not received.	When a DTC deletion operation is implemented or the ID code of the tire pressure sensor is newly registered in the ECU.
C2122/22	Tire pressure sensor ID2 not received.	
C2123/23	Tire pressure sensor ID3 not received.	
C2124/24	Tire pressure sensor ID4 not received.	
C2125/25	Tire pressure sensor ID5 not received.	
C2141/41	A malfunction in the tire pressure sensor registered to ID1	
C2142/42	A malfunction in the tire pressure sensor registered to ID2	
C2143/43	A malfunction in the tire pressure sensor registered to ID3	
C2144/44	A malfunction in the tire pressure sensor registered to ID4	
C2145/45	A malfunction in the tire pressure sensor registered to ID5	

(Continue)

C2165/65	Abnormal temperature inside ID1 tire	When a DTC deletion operation is implemented or the ID code of the tire pressure sensor is newly registered in the ECU.
C2166/66	Abnormal temperature inside ID2 tire	
C2167/67	Abnormal temperature inside ID3 tire	
C2168/68	Abnormal temperature inside ID4 tire	
C2169/69	Abnormal temperature inside ID5 tire	
C2171/71	Tire pressure sensor ID not registered	
C2176/76	Tire pressure monitor receiver is error	When deletion conditions of the ID codes have been established or departing from the test mode.
C2181/81	Tire pressure sensor ID1 not received (test diagnosis)	
C2182/82	Tire pressure sensor ID2 not received (test diagnosis)	
C2183/83	Tire pressure sensor ID3 not received (test diagnosis)	
C2184/84	Tire pressure sensor ID4 not received (test diagnosis)	
C2185/85	Tire pressure sensor ID5 not received (test diagnosis)	
C2191/91	Vehicle speed signal error (test diagnosis)	