

TIRE PRESSURE MONITOR SYSTEMS

Audi - 2005-09 A6, 2007-09 Q7, 2007-09 S6

DESCRIPTION & OPERATION

TIRE PRESSURE MONITOR (TPM) SYSTEM

The Tire Pressure Monitor (TPM) system is used for continuous monitoring of tire pressure in all 4 road wheels while the vehicle is moving. It assists the driver in checking tire pressures, and provides warning messages on the instrument cluster and in a center instrument cluster display in case of loss of tire pressure.

As soon as the tire pressure monitoring system senses a significant loss of air pressure in one or more tires, text messages and Yellow symbols appear in the instrument cluster display (some models may display multi-colored, higher resolution symbols). The system continuously receives radio signals from sensors located inside each tire.

The low pressure warning light in the instrument cluster illuminates when:

- Tire pressure is 7 psi (48 kPa) lower than it should be.
- Tire pressure falls below 23 psi (159 kPa).
- Tire pressure is 25 percent lower than what is specified on tire pressure label.

The center instrument cluster display will also show a flat tire symbol, along with a text message which reads "PLEASE CHECK TYRE PRESSURE". After a few seconds, message is replaced by the regular display (press CHECK button to show message again).

RESET PROCEDURES

NOTE: Whenever tire pressure is adjusted (i.e., when readjusting tire pressure for a load condition), the adjusted pressure has to be stored again. See **STORING TIRE INFLATION PRESSURES**. If tire was changed, the new tire must be initialized. See **WHEEL CHANGE INITIALIZATION**.

TIRE PRESSURE MONITOR WARNING DISPLAY

CAUTION: DO NOT adjust tire pressure when tire temperature is excessive. This could lead to serious tire damage or cause the tire to burst, with the additional danger of an accident.

NOTE: Tire pressure is also dependent on temperature of the tire. For every 18°F (10°C) increase in tire temperature, tire pressure increases about 1.5 psi (10 kPa). Tire pressure should only be adjusted when tires are cold (about the same as ambient air temperature).

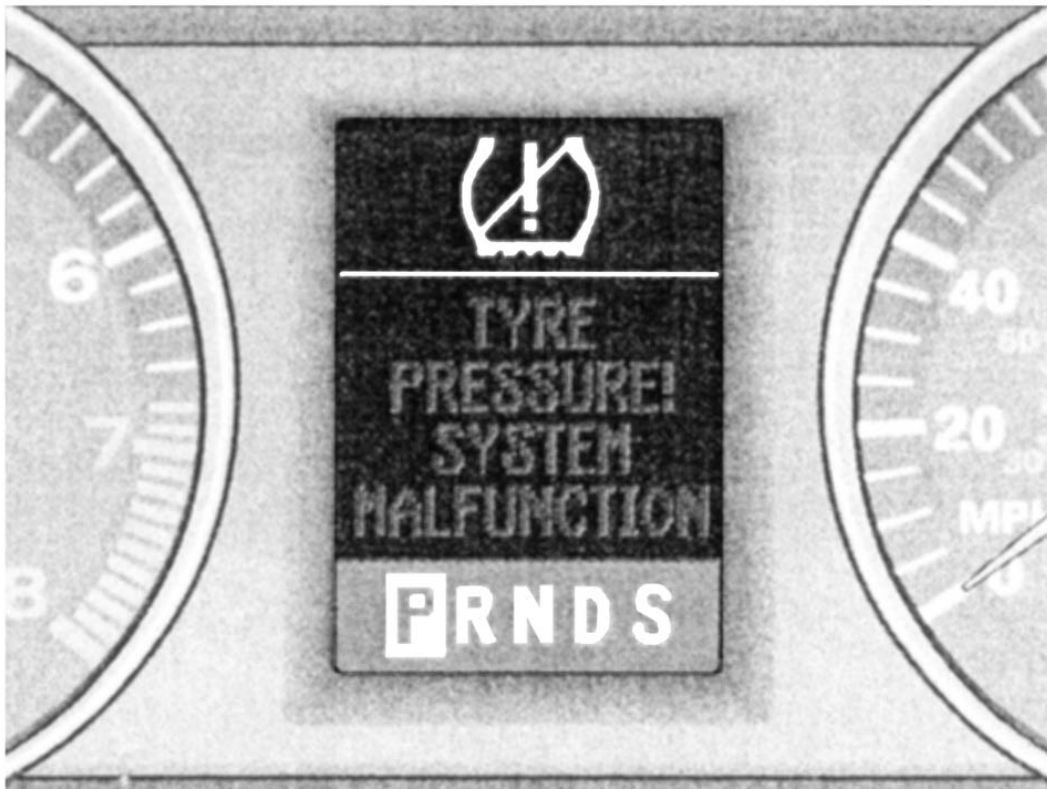
Check and correct tire inflation pressures of wheels on vehicle. Tire pressure information is provided on the tire pressure label located inside fuel filler flap.

After checking inflation pressures and properly inflating tires, current pressures have to be stored in monitoring system. System then implements automatic adaptation process. See **STORING TIRE INFLATION PRESSURES**.

If the tire pressure monitoring system is not available, a tire symbol with a slash through it and a warning message will appear in the center instrument cluster display. See **Fig. 1**. This could be caused by the following:

- If this symbol is displayed at the end of a learning phase, it means that the system cannot recognize which wheels are mounted on the vehicle. This may be because one or more wheels were mounted lacking a wheel sensor.
- A wheel sensor or other component may have failed.
- The system recognizes more than 4 wheels are present on the vehicle (i.e., when additional winter tires are being transported on the vehicle and are transmitting data).
- A wheel was changed, and the new tire was not initialized. See **WHEEL CHANGE INITIALIZATION**.
- If vehicle is being operated with snow chains, system function can be affected by the shielding effect of the chains.
- System is not available due to a malfunction.
- Other transmitting devices with the same frequency (i.e., headphones with integrated radio) are emitting an electro-magnetic field which can cause temporary interference in the system.

NOTE: **If system is malfunctioning due to interference, eliminate cause of interference and re-initialize system. See WHEEL CHANGE INITIALIZATION.**



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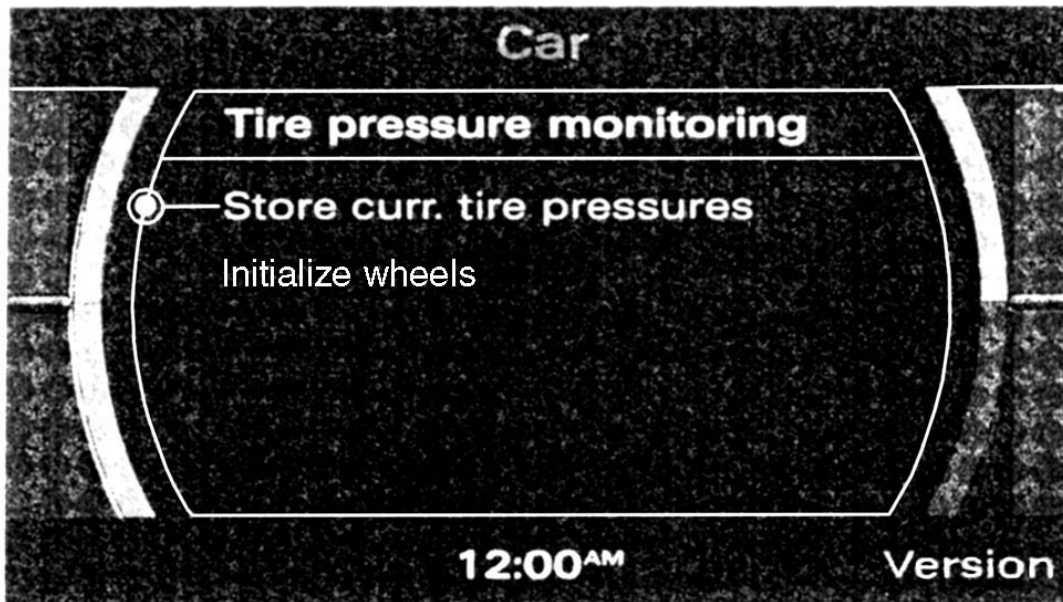
Fig. 1: Identifying TPM System Malfunction Display
Courtesy of AUDI OF AMERICA, INC.

STORING TIRE INFLATION PRESSURES

NOTE: Whenever tire pressure is adjusted (i.e., when readjusting tire pressure for a load condition), the adjusted pressure has to be stored again.

NOTE: In order for the tire pressure monitoring system to work, the specified pressures (provided on tire pressure label located inside fuel filler flap) must be reprogrammed after every change in air pressure.

1. Ensure air pressure in all tires is properly adjusted to specification.
2. On the center instrument cluster display, press the CAR function button. See [Fig. 2](#).
3. Select "TIRE PRESSURE MONITORING".
4. Select "STORE CURR. TIRE PRESSURES".



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Fig. 2: Identifying Tire Pressure Monitoring Display

Courtesy of AUDI OF AMERICA, INC.

WHEEL CHANGE INITIALIZATION

NOTE: If tire was changed, the new tire must be initialized. Tire change is incomplete if initialization process is not performed.

NOTE: Initialization process can take up to 20 minutes. During this time, the sensors are readjusting to the new wheel/tire combination and the monitoring system is operating at reduced sensitivity. The system will only warn when tire pressure drops below the minimum permissible specified pressure (warning symbol and message will appear).

1. Ensure air pressure in all tires is properly adjusted to specification.
2. On the center instrument cluster display, press the CAR function button. See **Fig. 2**.
3. Select "TIRE PRESSURE MONITORING".
4. Select "WHEEL CHANGE".

DISMOUNTING/MOUNTING PROCEDURES

CAUTION: The tire should be dismounted from the wheel using the tire changer manufacturer's instructions. Use the following information to avoid damage during the dismounting/mounting procedures.

CAUTION: When tires are replaced, the sensors and valves must not be detached or

exchanged. Only the valve core needs to be replaced. DO NOT replace the valve and wheel electronics unless necessary.

- NOTE:** The valve insert of the tire pressure sensor must be replaced each time tire is changed. See TIRE PRESSURE SENSOR.
- NOTE:** Tire pressure is also dependent on temperature of the tire. For every 18F (10C) increase in tire temperature, tire pressure increases about 1.5 psi (10 kPa). Tire pressure should only be adjusted when tires are cold (about the same as ambient air temperature).
- NOTE:** In order for the tire pressure monitoring system to work, the specified pressures (provided on tire pressure label located inside fuel filler flap) must be reprogrammed after every change in air pressure. See STORING TIRE INFLATION PRESSURES under RESET PROCEDURES.
- NOTE:** If tire was changed, the new tire must be initialized. See WHEEL CHANGE INITIALIZATION under RESET PROCEDURES.

TIRE PRESSURE SENSOR

Removal

CAUTION: The tire pressure sensor must not come into contact with water or be blown with compressed air when cleaning the wheel or wheel rim.

CAUTION: If tire sealant compound is used, tire pressure sensors must be replaced and wheel rims cleaned.

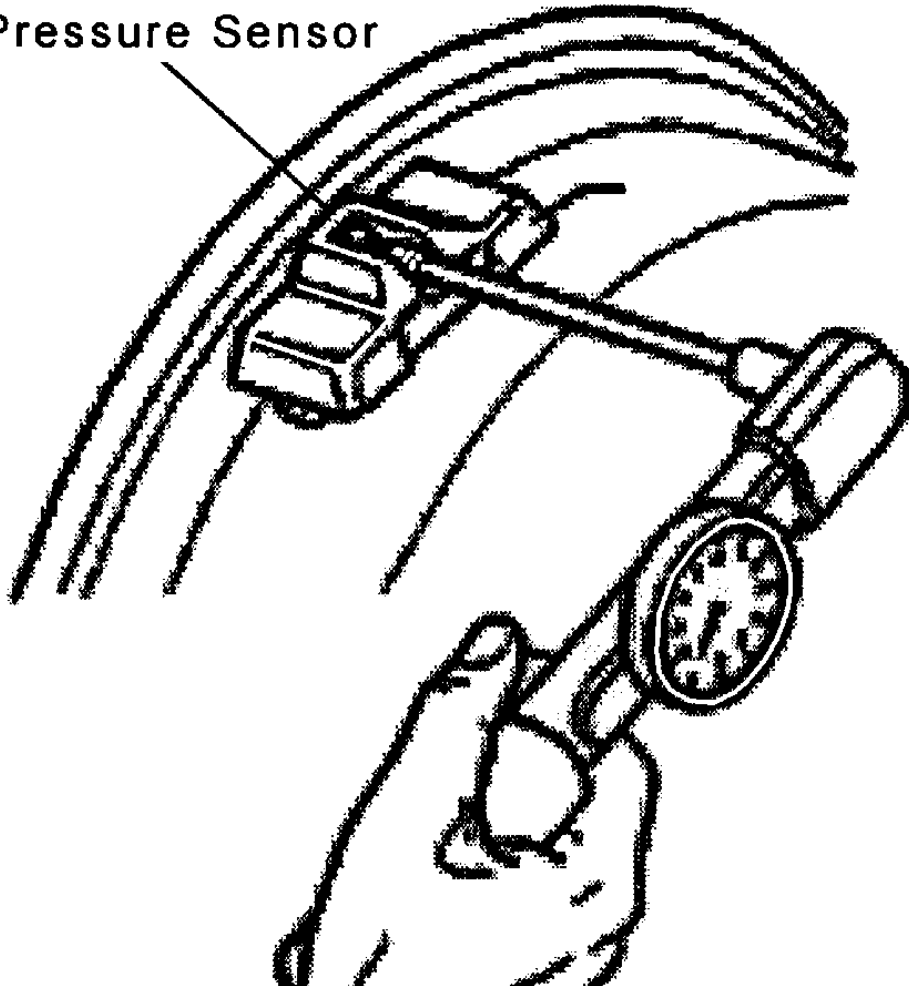
CAUTION: Damaged tire pressure sensors or valves must be replaced.

NOTE: To perform this procedure, Torque Wrench (V.A.G. 1410) is required.

1. Remove tire and wheel assembly from vehicle.
2. Dismount tire from wheel following tire changer manufacturer's instructions while paying special attention to the following to avoid damaging the pressure sensor:
 - Remove valve insert to release air from tire before removing tire.
 - Press tire off both rim edges on opposite side to metal valve.
 - Turn wheel on tire mounting equipment so that the valve/tire pressure sensor is opposite the mounting head.

3. While counterholding sensor (for example, with a 2-mm twist drill), remove tire pressure sensor. See **Fig. 3**.
4. While counterholding sensor, remove nut and metal valve. See **Fig. 4** and **Fig. 5**.

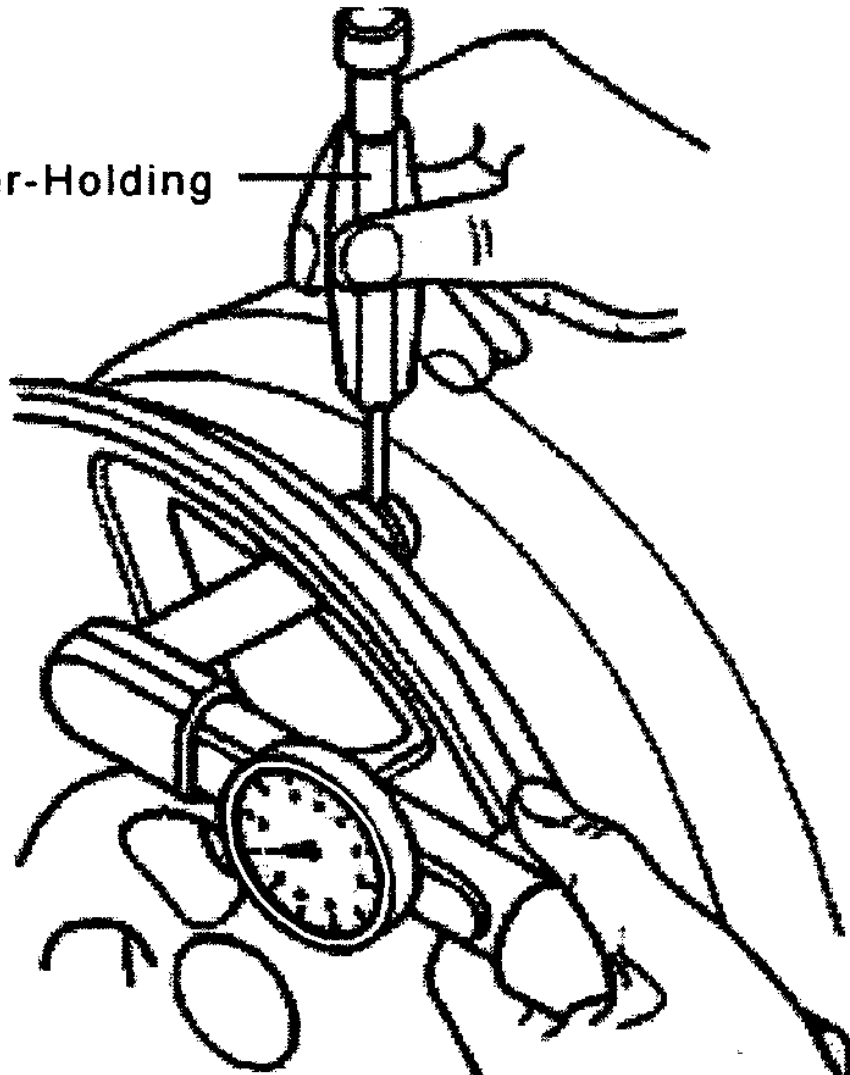
Tire Pressure Sensor



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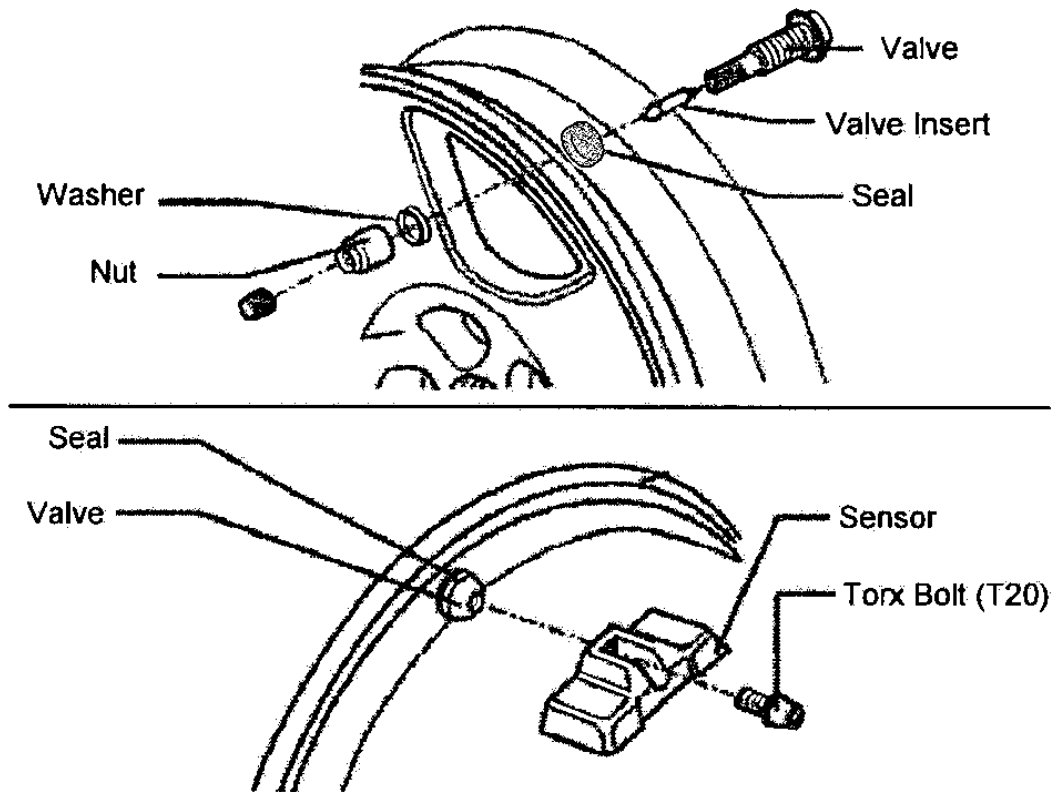
Fig. 3: Removing & Installing Tire Pressure Sensor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

2mm
Counter-Holding
Tool



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Fig. 4: Removing & Installing Tire Pressure Sensor Nut
Courtesy of VOLKSWAGEN UNITED STATES, INC.



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Fig. 5: Exploded View Of Tire Pressure Sensor

Courtesy of VOLKSWAGEN UNITED STATES, INC.

Installation

1. To identify replacement tire pressure sensors, see **TIRE PRESSURE SENSOR PART IDENTIFICATION** table.

NOTE: The valve insert of the tire pressure sensor must be replaced each time tire is changed.

2. While counterholding sensor, install metal valve and tighten nut to 35 INCH lbs. (4 N.m). See **Fig. 4**.
3. While counterholding sensor, press tire pressure sensor against wheel rim and tighten nut to 35 INCH lbs. (4 N.m). See **Fig. 3**.
4. Mount tire on wheel following tire changer manufacturer's instructions, paying special attention to the following to avoid damaging tire pressure sensor:
 - Make sure that tire does not contact tire pressure sensor while mounting tire.
 - Turn the wheel on the tire mounting equipment so that valve/tire pressure sensor is opposite the mounting head.
5. Install tire and wheel assembly to vehicle.
6. Adjust inflation pressures of all tires (including spare tire), and balance tires. Store new tire pressures in

2008 Audi A6 Quattro

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system. See **STORING TIRE INFLATION PRESSURES** under RESET PROCEDURES.

TIRE PRESSURE SENSOR PART IDENTIFICATION

Application	Part No.
Left Front	G222
Right Front	G223
Left Rear	G224
Right Rear	G225

TORQUE SPECIFICATIONS

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Component	Ft. Lbs. (N.m)
Wheel Nut	
A6 & S6 Standard Wheel	89 (120)
A6 & S6 Security Wheel	103 (140)
Q7	119 (160)
	INCH Lbs. (N.m)
Tire Pressure Sensor Nut	35 (4)
Torx Fastener (T20)	35 (4)