TIRE PRESSURE MONITOR SYSTEM

Jeep - 2006-09 Grand Cherokee, Commander

DESCRIPTION & OPERATION

TIRE PRESSURE MONITOR (TPM) SYSTEM

The Tire Pressure Monitor (TPM) system monitors air pressure in the 4 road tires and the spare tire (if vehicle is equipped with full-size spare). The TPM system uses radio and sensor technology to monitor tire air pressure levels. Sensors, mounted to each road wheel as part of the valve stem, monitor tire pressure, air temperature inside tire, wheel acceleration and the sensor internal battery status for all four active road tires (and spare tire, if applicable).

The sensor will broadcast this information, along with a unique 32-bit ID, to a central receiver circuit located inside the Wireless Control Module (WCM). On premium models, sensor transponders are mounted in wheelhousings (2 in front, and one in rear). If a warning or fault condition exists, the WCM will send a bus message request to illuminate the low pressure warning light and to sound a chime. On some models, instrument cluster will display warning messages.

The TPM system remains active even if no tire pressure related message is displayed. The sensors lay dormant (Park Mode), then wake and start transmitting (Drive Mode) when the vehicle first reaches speeds over 20 MPH (32 KM/H) for 2006 models and 15 MPH (24 KM/H) for 2007 and later models. Once the wheels stop rotating for a period of approximately 20 minutes, the sensors shut down until again awakened. Although not transmitting as when in Drive Mode, while in Park Mode, the sensors still transmit approximately once every 13 hours to let the receiver know air pressure status at that time.

If a system fault is detected, the indicator light will flash on/off for 75 seconds, then remain ON continuously (for 2006-2007 flash on/off for 60 seconds, once every 10 minutes). On some models, if one of the vehicle active tires has been replaced by the spare or a wheel rim not equipped with a TPM sensor, the indicator light will flash for approximately 3 seconds every 10 minutes.

RESET PROCEDURES

NOTE: If a tire pressure sensor has been replaced, the tire pressure sensors must be retrained. See TIRE PRESSURE SENSOR RETRAINING.

TIRE PRESSURE MONITOR WARNING INDICATORS

NOTE: Tire pressure may increase from 2 to 6 psi (14 to 41 kPa) during normal driving conditions. Do NOT reduce this normal pressure build up.

If warning light is lit continuously due to low pressure in one or more tires, adjust tire inflation to specification. The light will remain on until tire pressure is properly set. After adjusting air pressure in a tire, allow approximately two minutes for the message or indicator lamp to go out.

If warning light flashes on/off for 75 seconds, then remains ON continuously (for 2006-2007 flash on/off for 60 seconds, every 10 minutes), there is a problem in the TPM system. See appropriate manufacturer service information.

TIRE PRESSURE SENSOR RETRAINING

NOTE: If a tire pressure sensor has been replaced, the TPM system needs to relearn tire pressure sensor IDs. For a normal road wheel, see ROAD WHEEL. For the spare tire, see SPARE TIRE.

Road Wheel

Using a RF signal, each sensor transmits tire pressure data approximately once every minute. Each sensor's (transmitter) broadcast is uniquely coded so that the WCM can monitor the state of each of the sensors on the 4 rotating road wheels. The WCM automatically learns and stores the sensor's ID while driving after a sensor has been replaced. There is no formal retraining procedure necessary.

Drive vehicle for a minimum of 10 minutes while maintaining a continuous speed above 20 MPH (32 KM/H) for 2006 models and 15 MPH (24 KM/H) for 2007-09 models. During this time, the system will learn the new sensor ID code and will clear any DTCs automatically. If a sensor cannot be trained, see appropriate manufacturer service information.

Spare Tire

NOTE: To program the tire pressure sensor ID for the spare tire, a diagnostic scan tool must be used.

Copy the ID number off of the new pressure sensor before installing it into spare tire. Then follow the programming steps outlined in the scan tool for: "LEARN SPARE TIRE SENSOR ID" under "MISCELLANEOUS FUNCTIONS" for the "WCM/WIRELESS CONTROL MODULE" menu item as appropriate.

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: The TPM system has been optimized for the original equipment tires and wheels. TPM system pressures have been established for the tire size equipped on your vehicle. Undesirable operation or sensor damage may result when using replacement equipment that is not of the same size, type, and/or style. Aftermarket wheels can cause sensor damage.

NOTE: If a tire pressure sensor has been replaced, the tire pressure sensors must be retrained. See TIRE PRESSURE SENSOR RETRAINING under RESET PROCEDURES.

NOTE: Wheels and tires are match-mounted at the factory. Before dismounting a tire from its wheel, a reference mark should be placed on the tire at the valve stem location, to ensure that it is remounted in the original position on the wheel. For match-mounting procedures, refer to appropriate manufacturer

service information.

TIRE PRESSURE SENSOR

CAUTION: The use of tire sealants is strictly prohibited for vehicles equipped with the Tire Pressure Monitor (TPM) system. Tire sealants can clog tire pressure sensors.

CAUTION: Before installing tire pressure sensor, ensure you have the correct sensor. Sensors can be easily identified by a black sensor body with a white outline oval insignia on the sensor body. Copy the ID number off of the new pressure sensor before installing it into spare tire.

CAUTION: To prevent moisture and contamination from entering the valve stem, the cap used on this valve stem contains an "O" ring seal. Retain original valve stem cap for reuse. A regular valve stem cap cannot be used as a substitute. After inspecting or adjusting the tire pressure, always reinstall the valve stem cap. This will prevent moisture and dirt entry into the valve stem, which could damage the wheel rim sensor.

CAUTION: The valve stem used on this vehicle is made from aluminum, and the core is nickel-plated brass. Retain original valve stem core for reinstallation. Do not substitute a valve stem made of a different material, as the different metals will cause corrosion.

CAUTION: Any time a sensor is to be installed in a wheel, a new seal and washer must be installed on the stem to ensure airtight sealing. The nut and valve core should also be replaced. See Fig. 1.

CAUTION: DO NOT reuse sensor-to-wheel grommet. Always use a new grommet when installing a pressure sensor and properly torque the sensor nut.

Removal

1. Raise and support vehicle. Remove tire and wheel assembly from vehicle.
2. Let the air out of the tire.
3. Remove tire from wheel according to manufacturer's instructions being careful not to damage TPM sensor with dismounting tools.
4. Remove sensor nut.
5. Remove sensor from wheel. See **Fig. 3**.

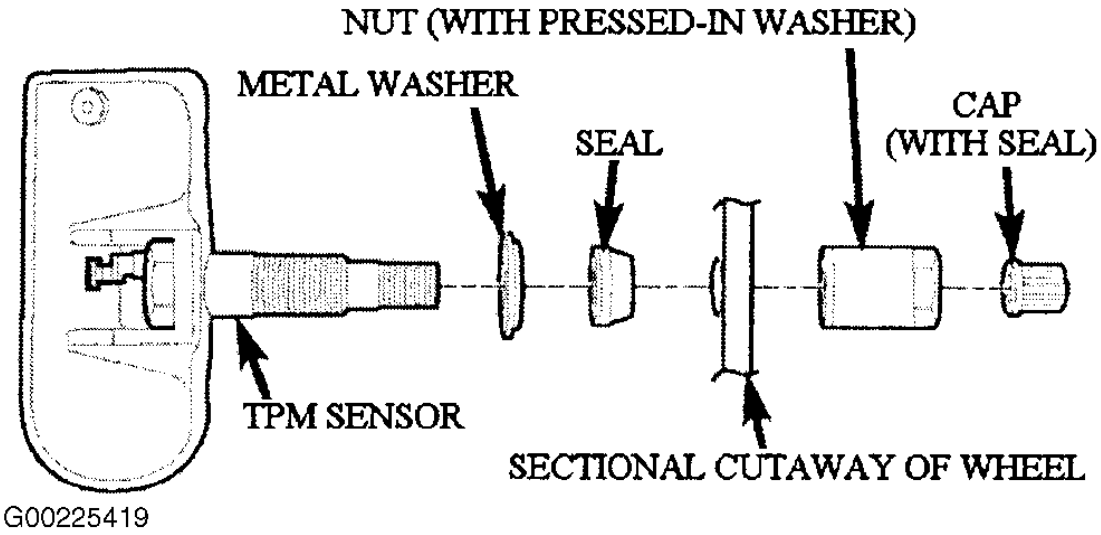

Fig. 1: Identifying Tire Pressure Sensor Components (1 Of 2)
Courtesy of CHRYSLER CORP.

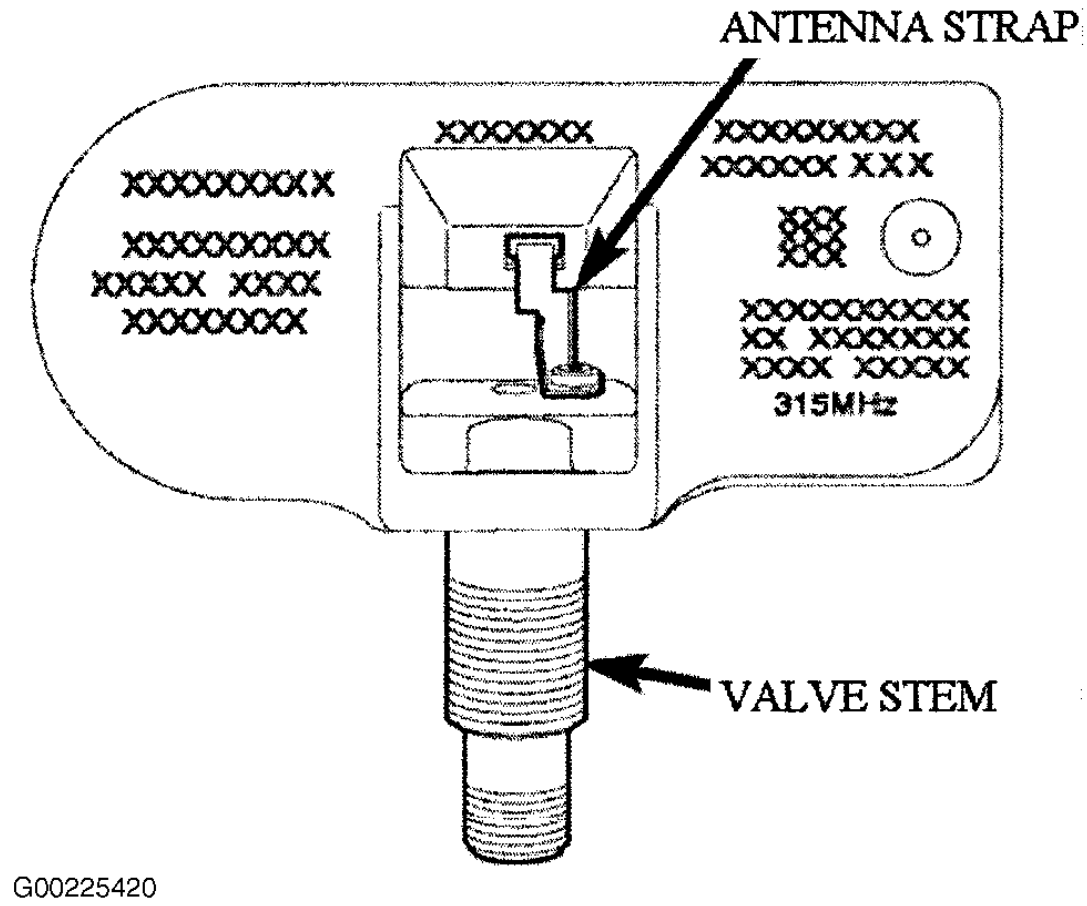

Fig. 2: Identifying Tire Pressure Sensor Components (2 Of 2)
Courtesy of CHRYSLER CORP.

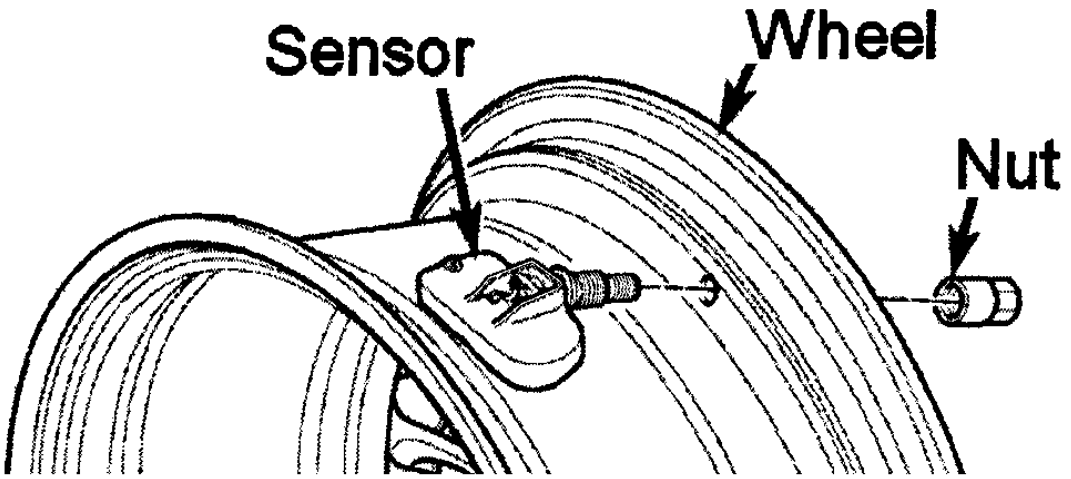

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Fig. 3: Removing & Installing Tire Pressure Sensor
Courtesy of CHRYSLER CORP.

Installation

NOTE: Before reinstalling an existing tire pressure sensor, replace valve core, seal and metal washer at base of valve stem to ensure proper sealing. See Fig. 1.

1. Wipe area clean around sensor/valve stem mounting hole in wheel. Make sure surface of wheel is not damaged.

CAUTION: To avoid damaging sensor antenna strap, hold pressure against rear of metal valve stem while sensor is inserted through wheel mounting hole and nut is installed. See Fig. 2 and Fig. 3 .

2. Insert sensor through wheel as shown keeping pressure against rear of metal valve stem. Potted side of sensor is to be positioned toward wheel. Do not attempt to mount sensor otherwise, or damage may occur. Install sensor nut (with pressed-in washer) by hand. See **Fig. 3** and **Fig. 4** .

NOTE: Before tightening sensor nut, push downward on sensor housing in an attempt to make it flush with interior contour of wheel.

3. Using a thin-walled socket, install sensor nut. While holding sensor in position, tighten sensor nut to 53 INCH lbs. (6 N.m.) for 2008 and later, 71 INCH lbs. (8 N.m.) for model years 2006-2007.

CAUTION: Over-torquing the sensor nut by as little as 106 INCH lbs. (12 N.m.) may result in sensor separation from the valve stem. Under this condition, the sensor may still function; however, the condition should be corrected immediately.

4. Mount tire on wheel following tire changer manufacturer's instructions, paying special attention to the following to avoid damaging tire pressure sensor:

- **Rotating Wheel Tire Changers**

Once the wheel is mounted to the changer, position the sensor valve stem approximately 280° from the head of the changer in a clockwise direction before rotating the wheel (also in a clockwise direction) to mount the tire. Use this procedure on both the upper and lower tire beads. See **Fig. 5**.

- **Rotating Tool Tire Changers**

  Position the wheel on the changer so that the sensor valve stem is approximately 210° from the head of the changer in a clockwise direction from the mounting end of the tool. See **Fig. 6**. Make sure the sensor is clear of the lower bead breaker area to avoid damaging the sensor when the breaker rises. Rotate the tool in a counterclockwise direction to mount the tire. Use this procedure on both the upper and lower tire beads.

5. Adjust air pressure to specification. Make sure original style valve stem cap is securely installed to keep moisture out of sensor. Install wheel and tire assembly on vehicle.
6. The new tire pressure sensor will need to be retrained. See **TIRE PRESSURE SENSOR RETRAINING** under RESET PROCEDURES.

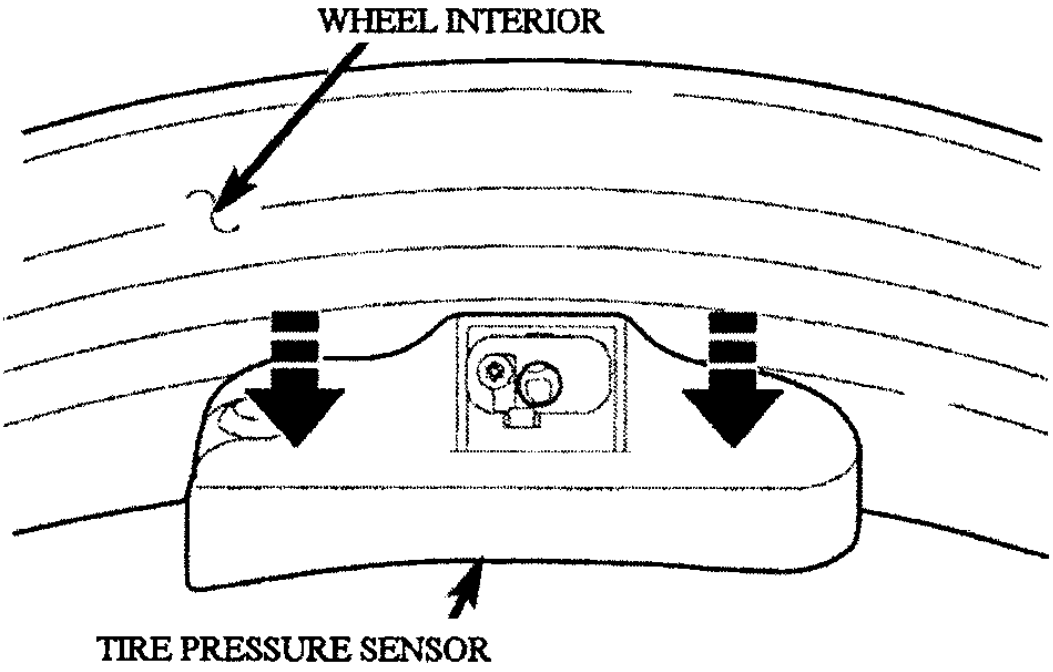

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Fig. 4: Installing Tire Pressure Sensor
Courtesy of CHRYSLER CORP.

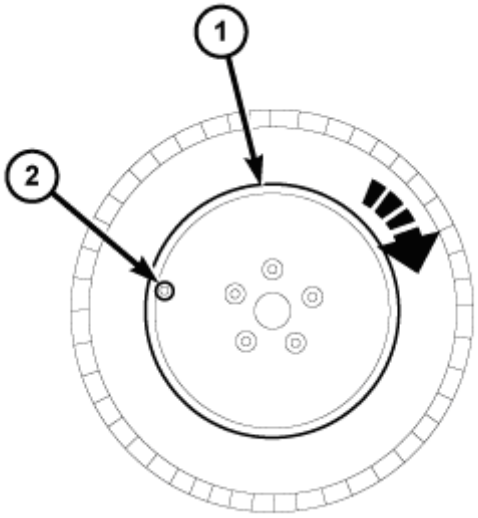

Fig. 5: Mounting Tire Using Rotating Wheel Machine
Courtesy of CHRYSLER CORP.

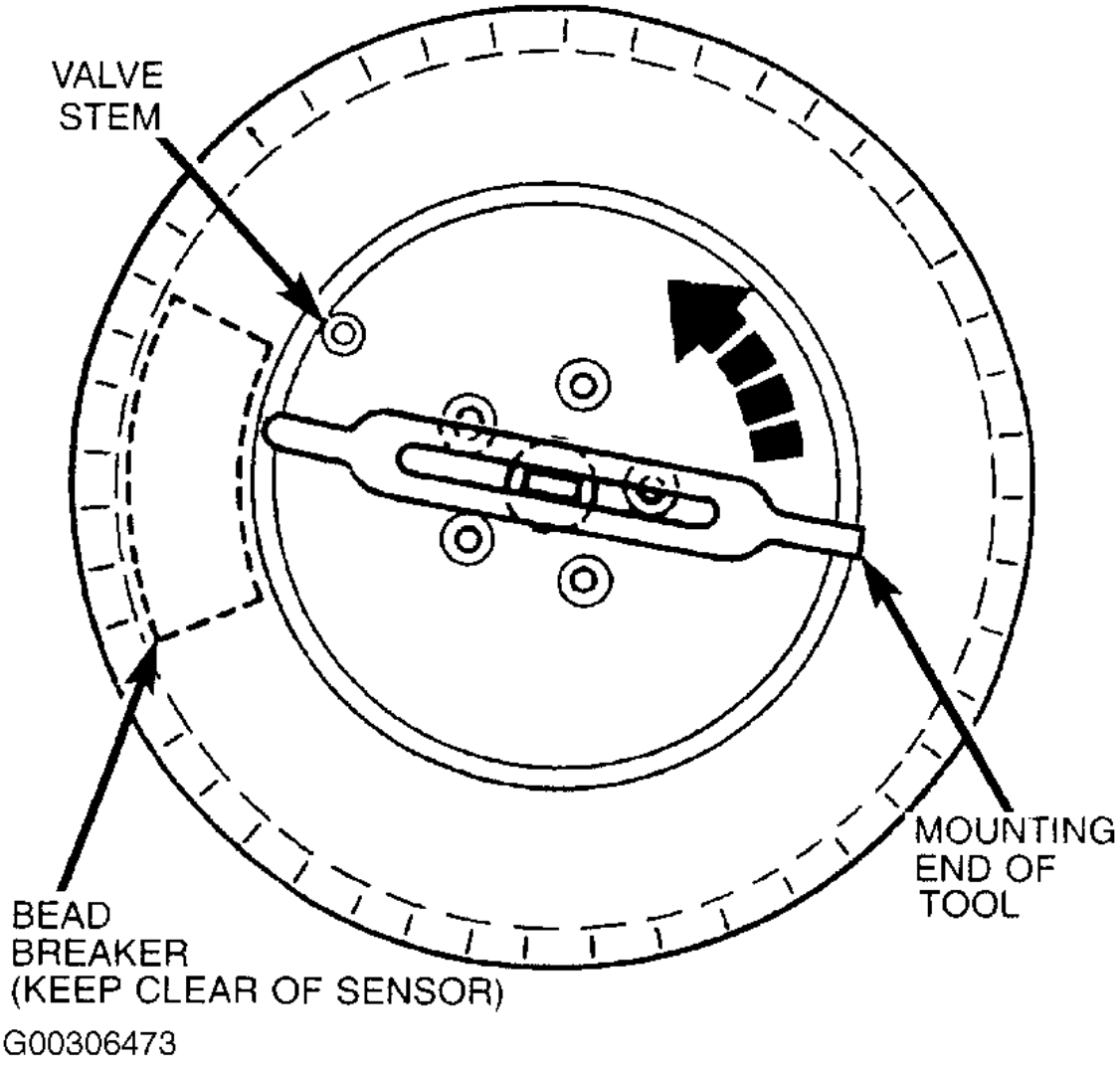

Fig. 6: Mounting Tire Using Rotating Tool Machine

Courtesy of CHRYSLER CORP.

TORQUE SPECIFICATIONS

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Component	**Ft. Lbs. (N.m)**
Spare Tire Winch	28 (39)
Wheel Nut (1)	100 +/- 15 (136 +/- 20)
	INCH Lbs. (N.m)
Tire Pressure Sensor Nut	(2) 71 (8) (2006-07). 53 (6) (2008 and later)

(1) Do not use chrome-plated lug nuts with chrome-plated wheels.

(2) Over-torquing the sensor nut by as little as 88 INCH lbs. (10 N.m) may result in sensor separation from the valve stem. Under this condition, the sensor may still function; however, the condition should be corrected immediately.