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The First Choice of Automotive Professionals

Tire Pressure Monitoring Systems Guide

Domestic & Import Vehicles through 2007



DESCRIPTION & OPERATION

RESET PROCEDURES

DISMOUNTING/MOUNTING INSTRUCTIONS

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TIRE PRESSURE MONITORING SYSTEMS GUIDE

**Domestic & Import Vehicles
through 2007**

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Special Tools for Tire Pressure Monitor System Procedures

NOTE: This table is provided as a Quick Ref for the special tools that are optional or required for different tire pressure monitor procedures.

Manufacturer/ Model	Type of Procedure	Tool Needed	Optional/Required
Acura			
All Models	Tire Pressure Sensor Registration	Honda Diagnostic System (HDS)	Optional
Audi			
All Models	Tire Pressure Sensor Replacement	Torque Wrench (V.A.G. 1410)	Required
Buick			
Century, LaSabre, Park Avenue & Regal	Tire Pressure Monitor System Recalibration	OBD-II Compatible Scan Tool	Optional
Rainier	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Cadillac			
CTS, CTS-V, DTS, Escalade, Escalade ESV, Escalade EXT, SRX & STS	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
DeVille & Seville	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (Non-Armored Vehicles use J-41760) (Armored Vehicles use OBD-II Compatible Scan Tool)	Required
XLR	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-41760 or J-46079)	Required
Chevrolet			
Avalanche, Silverado, Suburban, Tahoe & TrailBlazer	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Corvette	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (1997-04 uses J-41760) (2005-06 uses J-46079)	Required
Impala & Monte Carlo	Tire Pressure Monitor System Recalibration	OBD-II Compatible Scan Tool	Optional
Chrysler			
300M	Tire Pressure Sensor Retraining	Relearn Magnet (8821)	Required
Crossfire	Tire Pressure Sensor Retraining	Chrysler DRB-III ^R	Required
Town & Country (2002-03)	Tire Pressure Sensor Retraining	Relearn Magnet (8821)	Required
Dodge			
Viper	Tire Pressure Sensor Retraining	Relearn Magnet (8821)	Required
		Chrysler DRB-III ^R	Required
Ford			
Escape, Expedition, Explorer, F150, Freestar (Direct System), Mustang & Ranger	Checking Tire Pressure	Digital Tire Gauge (204-354)	Optional
	Tire Pressure Sensor Training	TPM Activation Tool (2004-05 Uses 204-324) (2006-2007 Uses 204-363)	Required
GMC			
Yukon Series	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Honda			
All Models	Tire Pressure Sensor Registration	Honda Diagnostic System (HDS)	Optional
Hummer			
H3	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Hyundai			
Entourage, Santa Fe, & Tucson	Tire Pressure Sensor Initiation	TPMS Exciter Scan Tool	Required

Special Tools for Tire Pressure Monitor System Procedures

NOTE: This table is provided as a Quick Ref for the special tools that are optional or required for different tire pressure monitor procedures.

Manufacturer/ Model	Type of Procedure	Tool Needed	Optional/Required
Infiniti			
All Models	Tire Pressure Sensor Registration	Consult-II	Required
		Consult-II Converter	Required
		Transmitter Activation Tool (J-45295)	Optional
Isuzu			
Ascender, i-290 & i-370	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Jaguar			
XJS & XJR (2006 Only)	Tire Pressure Sensor Initiation (Spare Tire Only)	Jaguar-Approved Diagnostic Tool	Required
Jeep			
Commander & Grand Cherokee (2006 -2007)	Tire Pressure Sensor Retraining (Spare Tire Only)	Chrysler DRB-III ^R	Required
Grand Cherokee & Liberty (2002-04)	Tire Pressure Sensor Retraining	Relearn Magnet (8821)	Required
Kia			
Optima, Sedona, Sorento & Sportage	Tire Pressure Sensor Initiation	TPMS Exciter Scan Tool	Required
Land Rover			
All Models	Tire Pressure Sensor Registration	Land Rover T4	Optional
Lexus			
ES 350, GS 300, GS 350, GS 430, GX 470, IS 250, IS 350, RX 350, RX 450H & SC 430	Tire Pressure Sensor Registration	Toyota Intelligent Tester	Required
LX 470	Tire Pressure Sensor Registration	Toyota Intelligent Tester (With CAN VIM)	Required
Lincoln			
Aviator, Mark LT & Navigator	Checking Tire Pressure	Digital Tire Gauge (204-354)	Optional
	Tire Pressure Sensor Training	TPM Activation Tool (2004-05 Uses 204-324) (2006-07 Uses 204-363)	Required
Mercury			
Mariner, Monterey (Direct System) & Mountaineer	Checking Tire Pressure	Digital Tire Gauge (204-354)	Optional
	Tire Pressure Sensor Training	TPM Activation Tool (2004-05 Uses 204-324) (2006 Uses 204-363)	Required
Mitsubishi			
Endeavor, Galant, Montero & Outlander	Tire Pressure Sensor Retraining	TPMS Magnet (MIT46716)	Required
		Scan Tool (MUT-III Sub Assembly) (MB991958)	Required
		Vehicle Communication Interface (V.C.I.) (MB991824)	Required
		MUT-III USB Cable (MB991827)	Required
		MUT-III Main Harness A (MB991910)	Required
Nissan			
All Models	Tire Pressure Sensor Registration	Consult-II	Required
		Consult-II Converter	Required
		Transmitter Activation Tool (J-45295)	Optional

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Special Tools for Tire Pressure Monitor System Procedures

NOTE: This table is provided as a Quick Ref for the special tools that are optional or required for different tire pressure monitor procedures.

Manufacturer/ Model	Type of Procedure	Tool Needed	Optional/Required
Oldsmobile			
Aurora	Tire Pressure Monitor System Recalibration	OBD-II Compatible Scan Tool	Optional
Pontiac			
Bonneville	Tire Pressure Monitor System Recalibration	OBD-II Compatible Scan Tool	Optional
Saab			
9-7x	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Saturn			
Aura & Outlook	Tire Pressure Sensor Relearn	TPM Sensor Activation Tool (J-46079)	Optional
Subaru			
B9 Tribeca, Legacy & Outback	Tire Pressure Sensor Registration	Subaru Select Monitor	Required
		Transmitter Registration Tool (TPM-00012 or Kent-Moore Part No. FJ45295)	Required
Suzuki			
Grand Vitara XL-7	Tire Pressure Sensor Registration	SUZUKI Scan Tool	Optional
		TPM Activation Tool (09945-86510)	Required
Toyota			
4Runner, Sequoia, Tacoma & Tundra	Tire Pressure Sensor Registration	Toyota Intelligent Tester	Required
Land Cruiser, Prius, RAV4 & Sienna	Tire Pressure Sensor Registration	Toyota Intelligent Tester (With CAN VIM)	Required
Volkswagen			
Passat	Tire Pressure Sensor Replacement (Wheels With Different Pressure Specifications)	Volkswagen VAS 5051B	Required
Phaeton & Touareg	Tire Pressure Sensor Replacement	Torque Wrench (V.A.G. 1410)	Required

TIRE PRESSURE MONITORING SYSTEMS

GMC – 2004-07 Sierra & Yukon Series

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MODEL COVERAGE

YEAR SYSTEM FIRST INSTALLED ON VEHICLE

Models	Starting Year
Sierra	2006
Yukon Series	2004

DESCRIPTION & OPERATION

TIRE PRESSURE MONITOR (TPM) SYSTEM

The Tire Pressure Monitor (TPM) system alerts the driver when any one or all 4 of the vehicle's tire pressures have become significantly underinflated. On some models, the system will also display individual tire pressures and their locations on the Driver Information Center (DIC).

On 2004-05 models, the TPM system uses the Passenger Door Module (PDM), Body Control Module (BCM), DIC, Instrument Panel Cluster (IPC), a radio frequency (RF) transmitting pressure sensor inside each wheel/tire assembly, and serial data circuit to perform the system functions.

On 2006-07 models, the TPM system uses the Powertrain Control Module (PCM), Body Control Module (BCM), Instrument Panel Cluster (IPC), DIC, Passenger Door Module (PDM) or Remote Control Door Lock Receiver (RCDLR), a radio frequency (RF) transmitting pressure sensor in each wheel/tire assembly, and the serial data circuit to perform the system functions.

On all models, when vehicle is stationary, the sensors go into stationary mode. In this mode, the sensors transmit once every 60 minutes to minimize sensor battery consumption. As vehicle speed increases to 20 MPH (32 KM/H), the sensors go into drive mode, in which they transmit once every 60 seconds.

NOTE: The sensor's pressure accuracy is about 2 psi (14 kPa) at temperatures from 14-158°F (-10-70°C).

The PDM/RCDLR receives and translates the data contained in each sensor transmission, then sends the tire pressure and tire location data to DIC. When TPM system detects a significantly underinflated tire pressure, a "CHECK TIRE PRESSURE" message is displayed on the DIC and the low tire pressure indicator is displayed on the IPC. This DIC message will also set if a spare tire is in use.

The PDM/RCDLR has the ability to detect malfunctions within the TPM system. Any malfunctions detected will cause the DIC to display a "SERVICE TIRE MONITOR" warning message.

RESET PROCEDURES

NOTE: When the wheels have been rotated, or a tire pressure sensor or PDM/RCDLR has been replaced, retrain tire pressure sensor. See TIRE PRESSURE SENSOR RELEARN.

TIRE PRESSURE MONITOR WARNING INDICATORS

When the tire pressure warning light illuminates and warning message appears on DIC, immediately check air pressure of all tires and adjust to the specified pressure.

The DIC will display the "SERVICE TIRE MONITOR" message if one or more of the tire pressure sensors has malfunctioned or if all of the sensors have not been programmed successfully. See TIRE PRESSURE SENSOR RELEARN. If warning indicators are still on, there is a problem in the TPM system. See appropriate manufacturer service information.

TIRE PRESSURE SENSOR RELEARN

NOTE: When the wheels have been rotated, or a tire pressure sensor or PDM/RCDLR has been replaced, retrain tire pressure sensor.

Description & Operation – The TPM system uses the Passenger Door Module (PDM) or Remote Control Door Lock Receiver (RCDLR), Body Control Module (BCM), headlight switch, 4 Radio Frequency (RF)

transmitting pressure sensors, and the serial data circuit to perform the sensor learn mode functions. The sensor learn procedure must be performed any time the PDM/RCDLR is replaced, a sensor is replaced, or after the vehicle's tires have been rotated. Once the learn mode has been enabled, each of the sensor's unique Identification (ID) codes can be learned into the PDM/RCDLR's memory. When a sensor's ID has been learned, the PDM/RCDLR sends a serial data message to the BCM to sound a horn chirp. This verifies the sensor has transmitted its ID, and the PDM/RCDLR has received and learned it.

Each sensor takes a pressure measurement sample once every 20-30 seconds while in stationary mode. If the tire pressure increases or decreases by more than 1.6 psi (11 kPa) from the last pressure measurement, another measurement will occur immediately to verify the change in pressure. If a pressure change has indeed occurred, the sensor transmits in re-measure mode. When the PDM/RCDLR receives a re-measure mode transmission while in learn mode, it will assign that sensor ID to the location on the vehicle relative to the order in which it was learned. The PDM/RCDLR must learn the sensor ID codes in the proper sequence in order to determine sensor location. The first learned ID is assigned to left front, the second to right front, the third to right rear and fourth to left rear.

The TPM system will cancel the learn mode if more than 2 minutes have passed and no sensors have been learned, or if the system has been in learn mode for more than 5 minutes. If the learn mode is canceled before any sensor has been learned, the PDM/RCDLR will remember all current sensor IDs and their locations. As soon as the first sensor ID code is learned, all other IDs are erased from the PDM/RCDLR's memory. On models that display the individual tire pressure on DIC, updated tire pressures will not be displayed until PDM/RCDLR receives 2 more valid transmissions from each sensor. After performing the procedure below, always test drive the vehicle above 25 mph for at least 2 minutes before viewing tire pressures on DIC.

NOTE: Before proceeding with the steps below, ensure that no other sensor learn procedure is being performed simultaneously, or that tire pressures are not being adjusted on a TPM equipped vehicle within close proximity.

NOTE: In the following procedure, a TPM Sensor Activation Tool (J-46079) may be used in place of increasing/decreasing pressures to enable sensor. To use, place activator antenna against the tire sidewall close to the wheel rim at the valve stem location, then press and release the ACTIVATE button.

NOTE: If TPM Sensor Activation Tool (J-46079) is used, and vehicle is having trouble entering relearn mode, check batteries in activation tool. Low batteries may allow some functions to work, but not allow vehicle to perform learn function. When the internal battery is fresh (fully charged), the indicator is "full" or all dark. When the battery is depleted, the indicator shows "empty" or all light.

1) Turn ignition switch to ON position, with engine off. Apply parking brake.

NOTE: If learn mode cannot be enabled, TPM system is not enabled in PDM/RCDLR. See appropriate manufacturer service information.

2) Turn headlight switch from OFF to parking lamps 4 times within 4 seconds. A double horn chirp will sound and the low tire pressure indicator will begin to flash indicating the learn mode has been enabled (the low tire pressure indicator should continue flashing throughout the matching procedure, and "SERVICE TIRE MONITOR" message will be displayed on the DIC).

WARNING: Overinflating tires may cause personal injury or damage to the tires and wheels. When increasing tire pressure, do not exceed the maximum inflation pressure as noted on the tire sidewall.

TIRE PRESSURE MONITORING SYSTEMS

GMC – 2004-07 Sierra & Yukon Series (Cont.)

NOTE: If a horn chirp does not sound after 35 seconds for any of the 4 sensors, turn ignition switch to OFF position to exit the learn mode. Repeat procedure from step 1).

3) Starting with left front tire, increase or decrease the pressure for 8-10 seconds, or until a horn chirp sounds. Horn chirp may occur before the 8-10 second pressure increase/decrease time period has been reached, or up to 30 seconds after the 8-10 second pressure increase/decrease time period has been reached.

4) After horn chirp has sounded, proceed as in step 3) for the next 3 sensors in the following order: right front, right rear and left rear.

5) After left rear sensor has been learned, check to see if the low tire pressure indicator is still flashing. If it is, turn ignition switch to OFF position to exit relearn procedure. Adjust all tire pressures to specification. If the low tire pressure indicator is not flashing, repeat procedure from step 1).

6) The DIC may list all 4 of the tire pressures at 0 psi after tire pressure sensor relearn procedure has been performed (although PDM/RCDLR reads correct learn value of the tires). To complete the relearn procedure, drive the vehicle at highway speeds for 5 minutes.

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.

NOTE: If vehicle's tires are replaced with those not having a TPC Spec number, the TPM system may give an inaccurate low pressure warning. Non-TPC Spec tires may give a low pressure warning that is higher or lower than the proper warning level achieved by TPC Spec numbered tires.

NOTE: When the wheels have been rotated, or a tire pressure sensor or PDM/RCDLR has been replaced, retrain tire pressure sensor. See TIRE PRESSURE SENSOR RELEARN under RESET PROCEDURES.

TIRE PRESSURE SENSOR

CAUTION: DO NOT inject any tire liquid or aerosol tire sealant into tires, as this may cause a malfunction of the tire pressure sensors. If any tire sealant is noted upon tire dismounting, replace the sensor. Also remove all residual liquid sealant from the inside of the tire and wheel surfaces.

Removal – 1) Raise vehicle on a suitable support. Remove tire/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 tire pressure sensor:

- Place the sensor's cap and valve on a dry, clean surface after removal. The cap is aluminum and the valve is nickel-plated to prevent corrosion. DO NOT substitute a cap or valve made of any other material.
- Position the bead breaking fixture 90 degrees from valve stem when separating tire bead from wheel.
- Position the mounting/dismounting head so tire iron (or pry bar) can be inserted slightly clockwise of sensor body when prying tire bead up and over the mounting/dismounting head.
- Using tire machine, rotate tire/wheel assembly clockwise when transferring the tire bead to the outside of the wheel rim.
- Repeat items for inner bead.

3) Remove tire pressure sensor nut. See Fig. 1.

4) Remove sensor from wheel hole.

5) Remove sensor grommet from valve stem.

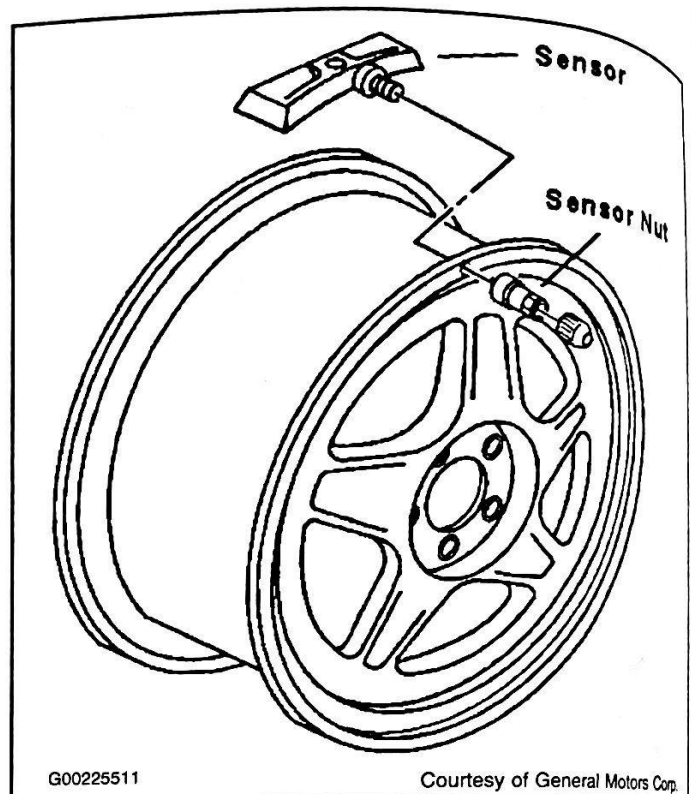


Fig. 1: Exploded View Of Tire Pressure Sensor

Installation – 1) Clean any dirt or debris from grommet sealing areas. Install grommet on sensor valve stem.

2) Insert sensor in wheel hole with the air passage facing away from the wheel.

3) Install sensor nut, and position sensor body parallel to inside wheel surface while tightening nut to 62 INCH lbs. (7 N.m).

4) Before installing tire on the wheel, note the following items to avoid tire pressure sensor damage upon tire mounting:

- Position the mounting/dismounting head 180 degrees from valve stem.
- Position the bead transition area 45 degrees counterclockwise of valve stem.
- Using tire machine, rotate tire/wheel assembly clockwise when transferring tire bead to the inside of the wheel rim.
- Repeat items for outer bead.

NOTE: A service replacement tire pressure sensor is shipped in OFF mode. In this mode, the sensor's unique identification code cannot be learned into the PDM/RCDLR's memory. The sensor must be taken out of OFF mode by spinning the tire/wheel assembly above 20 MPH (32 KM/H) for at least 10 seconds in order to close the sensor's internal roll switch.

5) Install tire on wheel. Install tire/wheel assembly on vehicle. Retrain tire pressure sensor. See TIRE PRESSURE SENSOR RELEARN under RESET PROCEDURES.

TORQUE SPECIFICATIONS

TORQUE SPECIFICATIONS

Component	FL Lbs. (N.m)
Spare Tire Hoist Retaining Bolt	30 (40)
Wheel Nut	140 (190)
	INCH Lbs. (N.m)
Tire Pressure Sensor Nut	62 (7)