

110 TIRE PRESSURE MONITORING SYSTEMS

CHART 110-2 Placard inflation pressure compared with the pressure when the TPMS triggers a warning light.

COLD PLACARD INFLATION PRESSURE (PSI)	WARNING LIGHT PRESSURE (-25%)	PSI LOW
40	30.0	10.0
39	29.3	9.7
38	28.5	9.5
37	27.8	9.2
36	27.0	9.0
35	26.3	8.7
34	25.5	8.5
33	24.8	8.2
32	24	8.0
31	23.3	7.7
30	22.5	7.5
29	21.8	7.2
28	21	7.0

CHART 110-2

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TECH TIP

Check Tire Pressure and Do Not Rely on the Warning Light

Industry experts think that 25% is too low and that this generally means that a tire has to be lower by about 8 PSI to trigger a warning light. All experts agree that tire pressure should be checked at least every month and kept at the specified cold placard inflation pressure.

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Figure 110-5 A clear plastic valve-stem tire-pressure monitoring sensor, showing the round battery on the right and the electronic sensor and transistor circuits on the left.



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110 TIRE PRESSURE MONITORING SYSTEMS

TECH TIP

Check the TPMS Sensors Before and After Service

It is wise to check that all of the tire-pressure monitoring system sensors are working before beginning service work. For example, if the tires need to be rotated, the sensors will have to be reprogrammed for their new location. If a tire-pressure monitoring sensor is defective, the procedure cannot be performed. Use an aftermarket or original equipment tire-pressure monitoring sensor tester, as shown in **FIGURE 110-8**.

Then the tire-pressure sensors should be checked again after the service to make sure that they are working correctly before returning the vehicle to the customer.

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? FREQUENTLY ASKED QUESTION

Does a TPMS Sensor Work before Being Installed?

No. New tire-pressure warning sensors (transmitters) are shipped in **storage mode**. This mode prevents the battery from becoming discharged while in storage. When the transmitter is installed in a wheel/tire assembly and the tire is inflated to more than 14 PSI (97 kPa), the transmitter automatically cancels storage mode. Once a transmitter has canceled storage mode, it cannot enter this mode again. Therefore, once a sensor has been installed and the tire inflated above 14 PSI, the clock is ticking on battery life.

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Figure 110-10 A tire-pressure warning light can vary depending on the vehicle, but includes a tire symbol.

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110 TIRE PRESSURE MONITORING SYSTEMS

Figure 110-11 The parts of a typical stem-mounted TPMS sensor. Notice the small hole used to monitor the inflation pressure. The use of stop-leak can easily clog this small hole.

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110 TIRE PRESSURE MONITORING SYSTEMS

TECH TIP

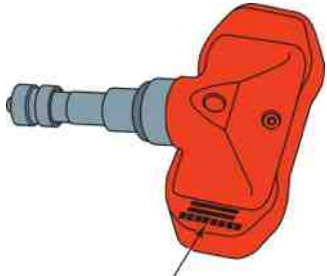
Check the Spare Tire

Many vehicles equipped with a full-size spare tire also have a TPMS sensor. If the inflation pressure decreases enough, the system will trigger the TPMS warning light. This is confusing to many vehicle owners who have checked all four tires and found them to be properly inflated. This fault often occurs during cold weather when the tire inflation pressure drops due to the temperature change. Most 2008 and newer vehicles equipped with a full size spare tire will come equipped with a TPMS sensor in the spare.

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Figure 110-12 When replacing a TPMS sensor, be sure to record the sensor ID because this needs to be entered into the system through the use of a tester or scan tool.



ID NUMBER (3RD LINE)
HEXADECIMAL 8 DIGIT

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Figure 110-13 A magnet is placed around the valve stem to reprogram some stem-mounted tire-pressure sensors.



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Figure 110-14 Always use an accurate, known-good tirepressure gauge. Digital gauges are usually more accurate than mechanical gauges.



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Figure 110-15 A clicker-type valve core tool ensures that the valve core is tightened to factory specifications.



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TECH TIP

All TPMS Sensors Will Fail

All TPMS pressure sensors will fail because they contain a battery that has a service life of 7 to 10 years. What does this mean to the service technician? This means that if new tires are being installed on a 5- or 6-year-old vehicle equipped with tire-pressure sensors, then the customer should be notified that the TPMS sensors could fail almost anytime.

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FREQUENTLY ASKED QUESTION

Can TPMS sensors be switched to new wheels?

Maybe. It depends on the style of the new or replacement wheels as to whether the sensors will fit or not. Some vehicles are designed to allow for a second set of sensors such as for winter tires. Many Lexus vehicles can be programmed to use set #1 or set #2. It is best to check before purchasing new wheels. Another set of TPMS sensors could be a major added expense.

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Figure 110-16 An assortment of service parts that include all of the parts needed to service a stem-mounted TPMS sensor being installed after removal for a tire replacement or repair.



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