

Technical Service Information Bulletin March 20, 2007

### Title: DIRECT-TYPE TIRE PRESSURE WARNING SYSTEM DIAGNOSTIC TIPS Models:

'04 - '08 Applicable Lexus

**Introduction** The Tire Pressure Warning System (TPWS) monitors the difference in tire pressure in all four or five tires (if the vehicle is equipped with a full-size spare tire) through radio wave signals from a tire pressure valve/sensor mounted in each wheel.

This bulletin provides system overview and diagnostic information for the direct-type TPWS.

Applicable Vehicles

- 2004 2007 model year GX 470 vehicles.
- 2006 model year GS 300 vehicles.
- 2006 2007 model year GS 430, IS 250/350, and LX 470 vehicles.
- 2007 model year ES 350, GS 350, LS 460, RX 350, and SC 430 vehicles.
- 2008 model year RX 350 vehicles.

Required Tools &	REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Equipment	TIS Techstream*         NOTE: Version 2.00.008 software         or later is required.	ADE	TSUNT	1
	* Essential SST			

### NOTE:

The Lexus Diagnostic Tester and CAN Interface Module may also be used to perform the service procedures listed in this bulletin.

Warranty Information

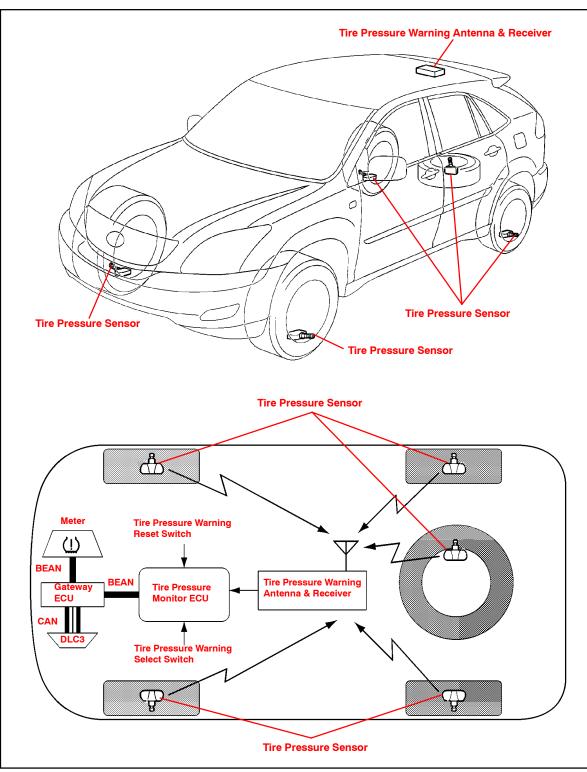
OP CODE	DESCRIPTION	TIME	OFP	T1	T2
N/A	Not Applicable to Warranty	-	_		-



 Summary of TPWS/
 The following illustration is an example of the TPWS component locations on 2007 model year RX 350 vehicles:

 Component Operation
 Operation



For exact location of each vehicle's TPWS components, refer to the Technical Information System (TIS), applicable model and model year Repair Manual, *Suspension – Tire Pressure Monitoring System* (see component or parts location). For additional information on the TPWS components and operation, refer to TIS, applicable model and model year New Car Features.

## Summary of Tire Pressure Warning Valve/Sensor:

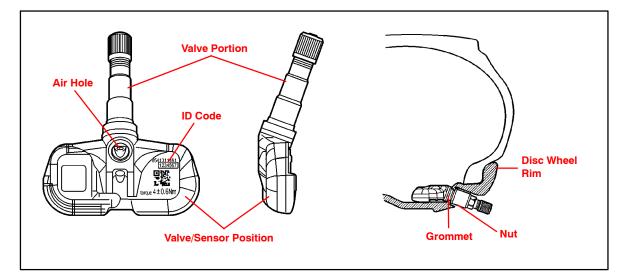
TPWS/ Component Operation

(Continued)

Each wheel (including the spare tire on certain vehicles) has a tire pressure warning valve/sensor integrated into the air valve with a unique ID number that measures the tire pressure and tire temperature and then transmits the information to the antenna/receiver mounted inside the vehicle through a radio wave signal. The unique ID number must be manually entered into the ECU using TIS Techstream whenever the tire pressure warning valve/sensor is replaced or after a tire and wheel are exchanged.

Vehicles equipped with a tire pressure warning valve/sensor inside the spare tire are listed in the following table:

MODEL	MODEL YEAR
ES 350 (w/Optional Full-size Spare)	2007
GX 470	2004 - 2007
LS 460	2007
RX 350	2007 - 2008



### NOTE:

- All Japan-built vehicles require the tire pressure warning valve/sensors to be activated ("wake up") during Pre-Delivery Service (PDS).
- Each tire pressure warning valve/sensor is equipped with a lithium battery that has an average life span of 10 years.
- If a tire pressure warning valve/sensor is removed from the wheel, the grommet MUST be inspected and replaced if damaged.

### Tire Pressure Warning System Antenna/Receiver:

The antenna/receiver receives each tire pressure, tire temperature, and the unique tire pressure warning valve/sensor ID numbers through radio wave signals from the tire pressure warning valve/sensors and then transmits the information to the TPWS ECU.

### Summary of **Tire Pressure Warning System ECU:**

TPWS/ Component Operation (Continued)

The ECU takes each tire pressure, tire temperature, and unique tire pressure warning valve/sensor ID information from the antenna/receiver and compares it to the specified value, which was registered during PDS. If the information received does NOT match the specified value registered in the ECU, it will transmit a signal to illuminate the Tire Pressure Warning System Indicator Light located on the combination meter. If the ECU is replaced, it is necessary to manually enter the tire pressure valve/sensor ID numbers using TIS Techstream.

### **Tire Pressure Warning System Indicator Light:**

The Tire Pressure Warning System Indicator Light on the combination meter is illuminated or flashes continuously when the ECU senses that the tire pressure, tire temperature, and/or unique ID number does NOT match the specified value registered in the ECU.

Conditions for the Tire Pressure Warning System Indicator Light "ON" or "Flashing" are listed in the following table:



CONDITION	CAUSE	REPAIR
After turning the key ON, the TPWS Indicator Light illuminates for 3 seconds and then turns OFF	Normal — "System Check"	Normal Condition
TPWS Indicator Light is ON and will NOT turn OFF	Low tire pressure has been detected	Check that all tire pressures are set to the tire inflation pressure indicated on the vehicle loading specification label
After turning the key ON, the TPWS Indicator Light flashes for 1 minute and then turns ON steady or flashes continuously	System Failure	See the "System Concerns & Repair Methods" sections in this TSIB

### Summary of Initialization/"SET" Switch:

TPWS/ Component Operation (Continued)

When initializing the TPWS, the present tire pressure is set as the standard pressure (for example: 32 psi). The TPWS determines a decrease in air pressure by comparing the standard pressure to the tire inflation pressure received from the tire pressure warning valve/sensor.

Reasons for initializing the system include:

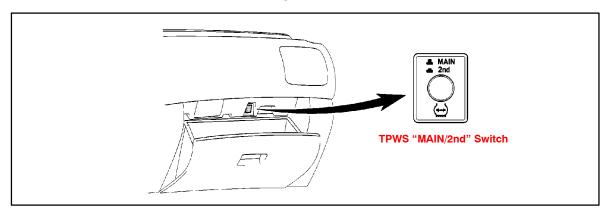
- When rotating tires that have different tire pressures in the front and rear.
- When changing or adjusting the tire pressure.
- When changing tire size or when tires are replaced.

Initialization/"SET" Switch
€ SET

### "MAIN/2nd" Switch:

The "MAIN/2nd" switch allows the owner to have two different sets of tires and wheels, with two different sets of tire pressure warning valve/sensor ID numbers. For example, the second set would be used for snow tires. Register both the main and the second set of tire pressure warning valve/sensor ID numbers in the TPWS ECU using TIS Techstream. Depending on what set of tire pressure warning valve/sensor ID numbers are being registered, the "MAIN/2nd" switch must be set in the correct position (i.e., "MAIN" for regular use tires and "2nd" for snow use tires).

- "MAIN/2nd" switch in the UP position The TPWS ECU is programmed to read the main set of tire pressure warning valve/sensor ID numbers.
- "MAIN/2nd" switch in the DOWN position The TPWS ECU is programmed to read the second set of tire pressure warning valve/sensor ID numbers.



TIS<br/>Techstream<br/>SetupWhen diagnosing the TPWS with TIS Techstream, it must be set up to read the tire<br/>pressures in "psi - gauge" (psi - g). Follow the screens below from TIS Techstream to<br/>convert the tire pressures to psi - g.

- Its techstream

   File
   Function

   Setup
   Tts

   Display Properties

   Connect
   User Preferences

   Vehicle Brand

   Open Sca
   Techstream Configuration

   VIM Select
   Language Selection

   Laure
   Check for Lipdates

   New Use
   Register Techstream Software

   Default Language
   Error Report Hot Key

   Updates
   Generic OBD II

   Software
   Registration

   User Check for
   Error Report Hot Key

   Updates
   Updates

   Check for Updates
   Error Report Hot Key

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- 1. Click Setup > User Preferences > Unit Selection.

2. On the *Unit Selection* dialog box, verify *Air Pressure* is set to *gauge* and *psi* (see the area outlined in red in the following screenshot).

Connect to Value	nt Selection (SH00-10)		
Open Scan Data File Lautch TIS	Vehicle Speed C km/h C MPH	Celsius P Fahrenheit	
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Union Language Selection Log Out	C solid C solid C solid C solid	If als If mining If gauge If in Hg	
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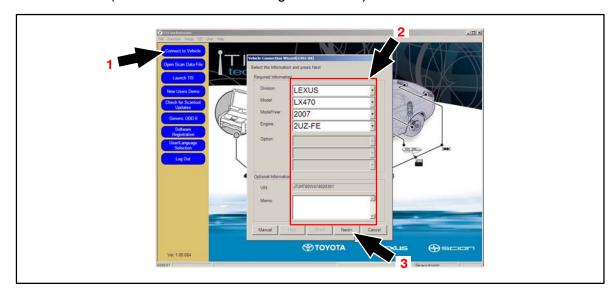
3. Click Apply.

System	COMMON SYMPTOM	CAUSE	REPAIR SUGGESTIONS
Concerns & Repair Methods	Cannot register the sensor ID numbers in the ECU using	TPWS ECU is initialized.	Jump terminals TC & CG at the DLC3 connector for 30 seconds to reset the TPWS ECU. (LX 470: jump terminals TC & E1 at the DLC1 connector.)
	TIS Techstream.	"MAIN/2nd" switch is in the incorrect position.	Ensure correct switch position and make sure loose objects do not contact the switch.
			1)Record all sensor ID numbers from TIS Techstream Data List.
	Cannot complete Pre-Delivery Service (PDS) activation "wake up" procedure.	Tire/wheel swapped prior to delivery to customer.	<ol> <li>Break down tires and compare the sensor ID numbers to what is recorded in the TPWS ECU.</li> </ol>
	<b>NOTE:</b> Vehicles built in North America come with the transmitter sensors already activated		<ol> <li>If incorrect, register the correct sensor ID numbers using TIS Techstream.</li> </ol>
	(awake). Vehicles built in Japan require the transmitter sensors	Sensor ID numbers	1)Break down tires and record all sensor ID numbers.
	to be activated during PDS. DTCs: C2111	are not registered.	2)Register the sensor ID numbers in the TPWS ECU using TIS Techstream.
	C2112 C2113		1)Tire pressure decrease is not fast enough.
	C2114 C2115	Transmitters are not activated (in sleep mode).	2)Loosen the valve core when releasing air pressure from the tire to activate ("wake up") the sensor (6 psi-g within 30 seconds).
		1)Sensor ID numbers	1)Record all sensor ID numbers from TIS Techstream Data List.
	One or more tire pressures display "-14 psi-g" & "-40°F" on TIS Techstream Data List.	<ul><li>are not registered.</li><li>2) Tire/wheel swapped prior to delivery</li></ul>	<ol> <li>Break down tires and compare the sensor ID numbers to what is recorded in the TPWS ECU.</li> </ol>
	DTCs: C2121 C2122	to customer.	<ol> <li>If incorrect, register the correct sensor ID numbers using TIS Techstream.</li> </ol>
	C2123 C2124 C2125 C2177	TPWS ECU or antenna/receiver malfunction.	Refer to the diagnostic procedure for checking the TPWS ECU and/or antenna/receiver located in the applicable Repair Manual on TIS.
		Transmitters are inoperative.	Replace sensors.

System	COMMON SYMPTOM	CAUSE	REPAIR SUGGESTIONS
Concerns & Repair Methods (Continued)	One or more tire pressures dis- play "-14 psi-g" & "-40°F" on TIS Techstream Data List. C2131 C2132 C2133 C2134 C2135 C2177	"MAIN/2nd" switch is in the incorrect position.	Check position of "MAIN/2nd" switch. ("MAIN" for the main set of tires and "2nd" for second set of tire pressure warning valve/sensor ID numbers.)
	Tire pressure reads higher than actual vehicle loading label specification.	Initialization is incorrect or incomplete.	Adjust and set tire pressures according to the vehicle loading label specification. (Label is inside the driver's door jamb.)

# Registration TIS Techstream Registration of Tire Pressure Warning Valve/sensor ID Numbers: Procedure

- 1. Click *Connect to Vehicle* (refer to "1" in the following screenshot).
- 2. Adjust vehicle information as necessary (refer to "2" and the area outlined in red in the following screenshot).



3. Click Next (refer to "3" in the following screenshot).

Procedure following screenshots).

(Continued)

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Registration 4. Select Tire Pressure Monitor (A) > Utility (B) > ID Registration (C) (refer to the

System Select						
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Customize Setting	Driver Seat Occupant Detection	Sliding Roof	Tit&Telescopic	Mirror	Rain Sensor	Wiper
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Main Menu						
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Pie Function Setup System Select	TIS User Help Stored Data Tire Pressure Utility Selection Select desired Utility	n Menu	utton.	Scored Chark	9	enpris Ensign
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