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2009 SUSPENSION Tire & Wheel - Highlander

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TIRE AND WHEEL SYSTEM

PRECAUTION

1. **REMOVAL AND INSTALLATION TIRE PRESSURE WARNING VALVE AND TRANSMITTER**
   a. When installing a tire, make sure that the tire pressure warning valve and transmitter does not interfere with the tire bead in order to prevent damage to the tire pressure warning valve and transmitter.
   b. After completing the operation, remove the valve core to rapidly release the air in the tire and check that the warning light comes on. If the warning light does not come on, the system may be defective.
   c. If there is air leakage, tighten the nut to a torque of 4.0 N*m (41 kgf*cm, 35 in.*lbf) and push the valve core 2 or 3 times to remove any dirt attached to the valve core. If air continues to leak, replace the grommet, washer, and nut.
   d. When installing the tire pressure warning valve and transmitter, check whether the rim, grommet, washer, and nut are clean. Use a manufacturer-specified cap.
   e. When putting air into the tire, first install the tire pressure valve straight onto the stem of the tire pressure warning valve and transmitter.
2. **TIRE AND WHEEL REPLACEMENT**
   a. If replacing a tire, be sure to check the grommet of the tire valve for damage. If the grommet is damaged, replace the grommet, washer, and nut.
   b. If replacing the tire pressure warning valve and transmitter, make sure that a new grommet and washer are used.
   c. If tires and wheels are replaced, register the transmitter ID (See **REGISTRATION**).

HOW TO PROCEED WITH TROUBLESHOOTING

1. **DIAGNOSIS OF TIRE VIBRATION**
   1. **TIGHTEN WHEEL NUTS**
   2. **INSPECT TIRES** (See **INSPECTION**)

      NG: Go to step 3

      OK: Go to step 4

   3. **REPAIR OR REPLACE TIRE(S)**
   4. **INSPECT AND/OR ADJUST WHEEL BALANCE** (See **TIRE PRESSURE WARNING SYSTEM**)
   5. **INSPECT FRONT AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT** (See

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ON-VEHICLE INSPECTION)

NG: Go to step 6

OK: Go to step 7

6. **REPAIR FRONT AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT** (See REMOVAL)
7. **INSPECT REAR AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT**
   a. for 2WD (See ON-VEHICLE INSPECTION)
   b. for 4WD (See ON-VEHICLE INSPECTION)

NG: Go to step 8

OK: Go to step 9

8. **REPAIR REAR AXLE HUB BEARING LOOSENESS AND AXLE HUB RUNOUT**
   a. for 2WD (See ON-VEHICLE INSPECTION)
   b. for 4WD (See ON-VEHICLE INSPECTION)
9. **PERFORM ROAD TEST**
10. **RETURN VEHICLE TO CUSTOMER**

2. **DIAGNOSIS OF IRREGULAR TIRE WEAR**
   1. **INSPECT TIRES** (See INSPECTION)
   2. **REPAIR OR REPLACE TIRE(S)**
   3. **INSPECT AND/OR ADJUST FRONT WHEEL ALIGNMENT** (See FRONT WHEEL ALIGNMENT)
   4. **INSPECT AND/OR ADJUST REAR WHEEL ALIGNMENT** (See REAR WHEEL ALIGNMENT)
   5. **PERFORM ROAD TEST**
   6. **RETURN VEHICLE TO CUSTOMER**

INSPECTION

1. **INSPECT TIRE**
   a. Check the tires for wear and proper inflation pressure.

Cold tire inflation pressure for USA, CANADA

COLD TIRE INFLATION PRESSURE SPECIFICATION - USA, CANADA

Tire size	Front kPa (kgf/cm^2 , psi)	Rear kPa (kgf/cm^2 , psi)
P245/55R19 103S P245/65R17 105S	210 (2.1,30)	210 (2.1,30)
	210 (2.1, 30)	210 (2.1,30)

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Cold tire inflation pressure for MEXICO

COLD TIRE INFLATION PRESSURE SPECIFICATION - MEXICO

Tire size		Front kPa (kgf/cm^2 , psi)	Rear kPa (kgf/cm^2 , psi)
P245/55R19 103S P245/65R17 105S	4 passengers or less	210 (2.1, 30)	210 (2.1, 30)
	5 passengers or more	210 (2.1,30)	230 (2.3, 33)

b. Using a dial indicator, check the runout of the tires.

Tire runout:

1.4 mm (0.055 in.) or less

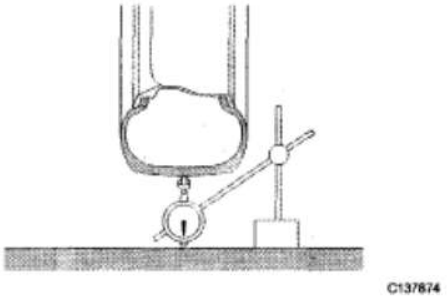


Fig. 1: Checking Runout Of Tires
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **ROTATE TIRES**
   a. Rotate the tires as shown in the illustration (A). If the vehicle is equipped with a grand spare tire, rotate the tires as shown in the illustration (B).
3. **INSPECT WHEEL BALANCE**
   a. Check and adjust the off-the-car balance.

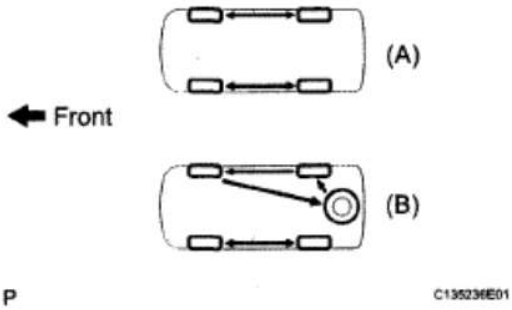


Fig. 2: Tires Rotation Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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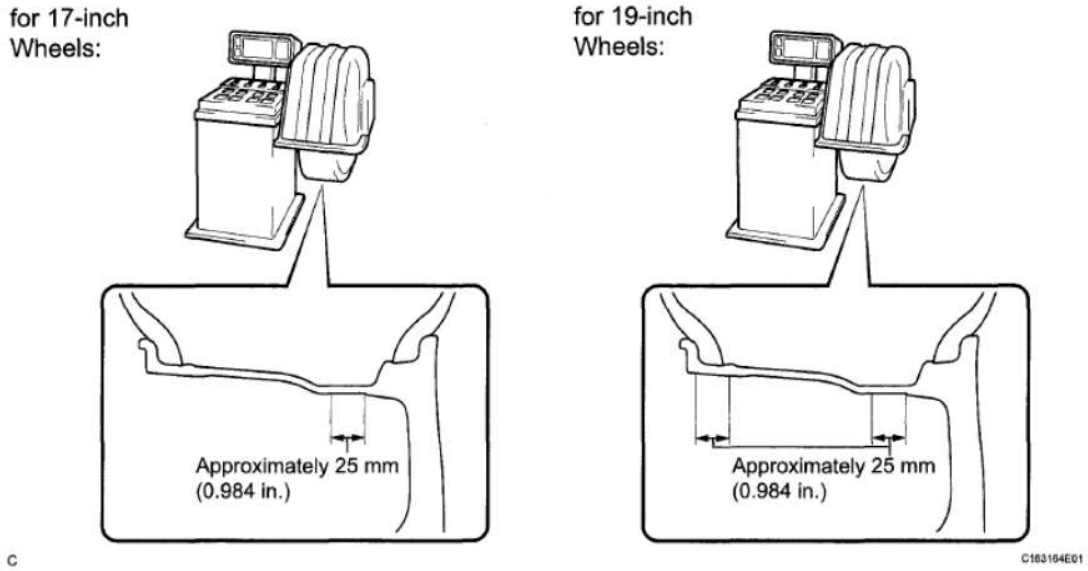


Fig. 3: Inspecting Wheel Balance
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Imbalance after adjustment:

8.0 g (0.018 1b) or less

NOTE:

- **Remove dirt, oil, and water from the surface where the balance weight is to be adhered with a cleaning detergent.**
- **Do not touch the sticking surface of the tape.**
- **Adhere the sticking type balance weight to the flat position shown in the illustration.**
- **Push the balance weight securely with a finger to adhere it to the indicated position.**
- **Do not reuse balance weights.**

HINT:

- For 19-inch wheels both inner side and outer side balance weight are sticking type.
- For 17-inch wheels the inner side balance weight should be installed by clipping it to the rim.
- If necessary, check and adjust wheel balance using an on-the-car balancer.

4. **INSPECT FRONT AXLE HUB BEARING LOOSENESS**

HINT:

See **ON-VEHICLE INSPECTION** .

5. **INSPECT REAR AXLE HUB BEARING LOOSENESS (for 2WD)**

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HINT:

See **ON-VEHICLE INSPECTION** .

6. **INSPECT REAR AXLE HUB BEARING LOOSENESS (for 4WD)**

HINT:

See **ON-VEHICLE INSPECTION** .

7. **INSPECT FRONT AXLE HUB RUNOUT**

HINT:

See **ON-VEHICLE INSPECTION** .

8. **INSPECT REAR AXLE HUB RUNOUT (for 2WD)**

HINT:

See **ON-VEHICLE INSPECTION** .

9. **INSPECT REAR AXLE HUB RUNOUT (for 4WD)**

HINT:

See **ON-VEHICLE INSPECTION** .

TIRE PRESSURE WARNING SYSTEM

PRECAUTION

1. **PRECAUTION FOR DISCONNECTING THE BATTERY CABLE**

NOTE: **When disconnecting the battery negative (-) terminal, initialize the following system after the terminal is reconnected:**

SYSTEM REFERENCE

System	See procedure
Power back door system	**INITIALIZATION**

2. **TIRE PRESSURE WARNING SYSTEM PRECAUTION**
   a. When the tire pressure warning light comes on, immediately check the tire pressure of the tire and adjust it to the specified value.

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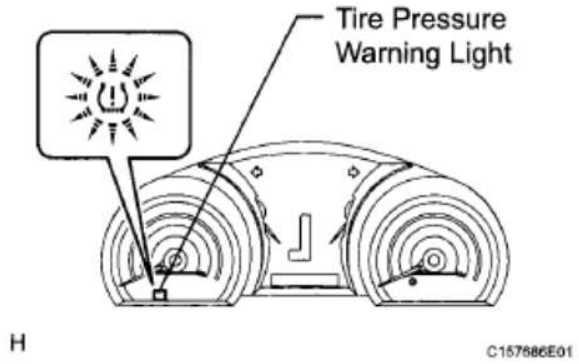


Fig. 4: Identifying Tire Pressure Warning Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Cold tire inflation pressure

for USA, CANADA

COLD TIRE INFLATION PRESSURE SPECIFICATION - USA, CANADA

Tire size	Front kPa (kgf/cm^2 , psi)	Rear kPa (kgf/cm^2 , psi)
P245/55R19 103S P245/65R17 105S	210 (2.1,30)	210 (2.1,30)
	210 (2.1,30)	210 (2.1, 30)

When driving under the above vehicle conditions at sustained high speeds above 160 km/h (100 mph), in countries where such speeds are permitted by law, inflate the front and rear tires to 240 kPa (2.4 kgf/cm^2 , 35 psi) provided that it does not exceed the maximum cold tire inflation pressure molded on the tire sidewalk

Cold tire inflation pressure

for MEXICO

COLD TIRE INFLATION PRESSURE SPECIFICATION - MEXICO

Tire size		Front kPa (kgf/cm^2 , psi)	Rear kPa (kgf/cm^2 , psi)
P245/55R19 103S P245/65R17 105S	4 passengers or less	210 (2.1, 30) (1) 220 (2.2, 32) (2)	210 (2.1, 30) (1) 220 (2.2, 32) (2)
	5 passengers or more	210 (2.1, 30) (1) 220 (2.2, 32) (2)	230 (2.3, 33) (1) 240 (2.4, 35) (2)
(1) For diving under 160 km/h (100 mph) (2) For driving at 160 km/h (100 mph) or over			

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b. When the tire pressure warning light comes on after blinking for 1 minute, there is a malfunction in the system. Check for DTCs.
c. It is necessary to register the transmitter ID in the tire pressure warning ECU after replacing a tire pressure warning valve and transmitter and/or tire pressure warning ECU (See **REGISTRATION**).
d. When replacing the tire pressure warning ECU:
    1. Using the DATA LIST, read the transmitter IDs registered in the ECU and make a note of them before removing the tire pressure warning ECU.
    2. Register the transmitter IDs after installing a new tire pressure warning ECU.
e. When replacing a tire pressure warning valve and transmitter:
    1. Take note of the 7-digit number (transmitter ID) written on the new tire pressure warning valve and transmitter when replacing it. Register the transmitter IDs in the tire pressure warning ECU after replacing the tire pressure warning valve and transmitter and installing the tires onto the wheels.

Tire Pressure Warning Valve and Transmitter:

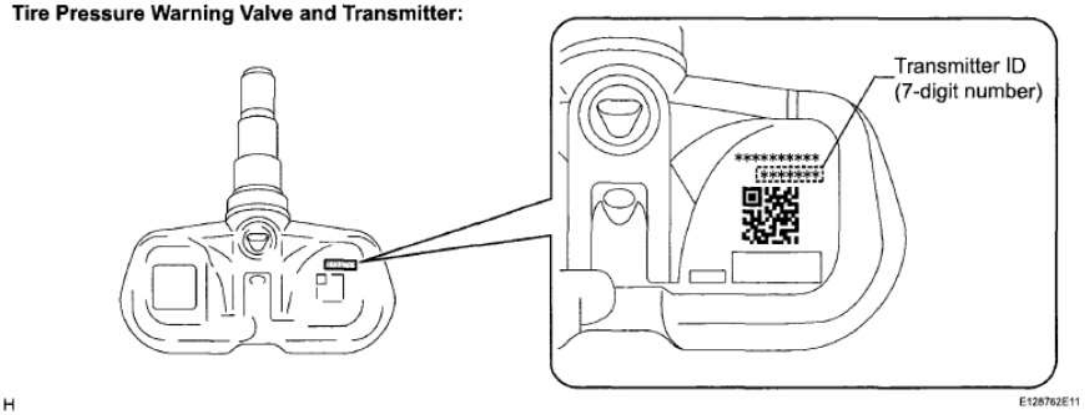


Fig. 5: Identifying 7-Digit Number Transmitter ID
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: The transmitter ID is written on the tire pressure warning valve and transmitter. It will be unable to be read after installing the tire onto the wheel. Therefore, take note of the transmitter ID before installing the tire onto the wheel. In order to register IDs, all IDs for the vehicle are necessary.

f. When replacing the tire pressure warning ECU and a tire pressure warning valve and transmitters, it is necessary to perform the initialization (See **INITIALIZATION**) after the registration (See **REGISTRATION**).
g. Precautions about the tire pressure:
    - The tire pressures decrease naturally.
    - In winter, tire pressure may decrease due to low ambient temperatures (tire pressure decreases by approximately 10 kPa (0.1 kgf/cm^2 , 1.45 psi) for every 10°C (50°F) drop in the ambient temperature). Therefore, the tire pressure warning is more likely to operate if the tire pressures are not adjusted appropriately. If the daily temperature variation is large, pressurize

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the tires high so that the tire pressures are suitable under cold conditions. As a result, incorrect tire pressure warning operation should decrease.

3. **IN CASE OF TIRE AND WHEEL REPLACEMENT**
   a. When tires and wheels are replaced, always ensure that each transmitter ID is correctly registered.
4. **INITIALIZATION PRECAUTION**
   a. Initialize the tire pressure warning system after any of the following is performed:
      - Replacing the tire pressure warning ECU or a tire pressure warning valve and transmitter.
      - When rotating tires on vehicles with differing front and rear tire inflation pressures.
      - Registering a transmitter ID.

   HINT:

   The tire pressure warning system will not operate properly if it is not initialized (See **INITIALIZATION**).

5. **FAIL-SAFE FUNCTION**
   a. When a system malfunction occurs in the tire pressure warning system, the tire pressure warning light comes on after blinking for 1 minute and informs the driver of the system failure.
   b. The result of this diagnosis is stored in the tire pressure warning ECU.
6. **CHECK TIRE PRESSURE AFTER REPAIRS**
   a. After repairs, confirm that the actual tire pressures are displayed in DATA LIST (See **DATA LIST/ACTIVE TEST**).

PARTS LOCATION

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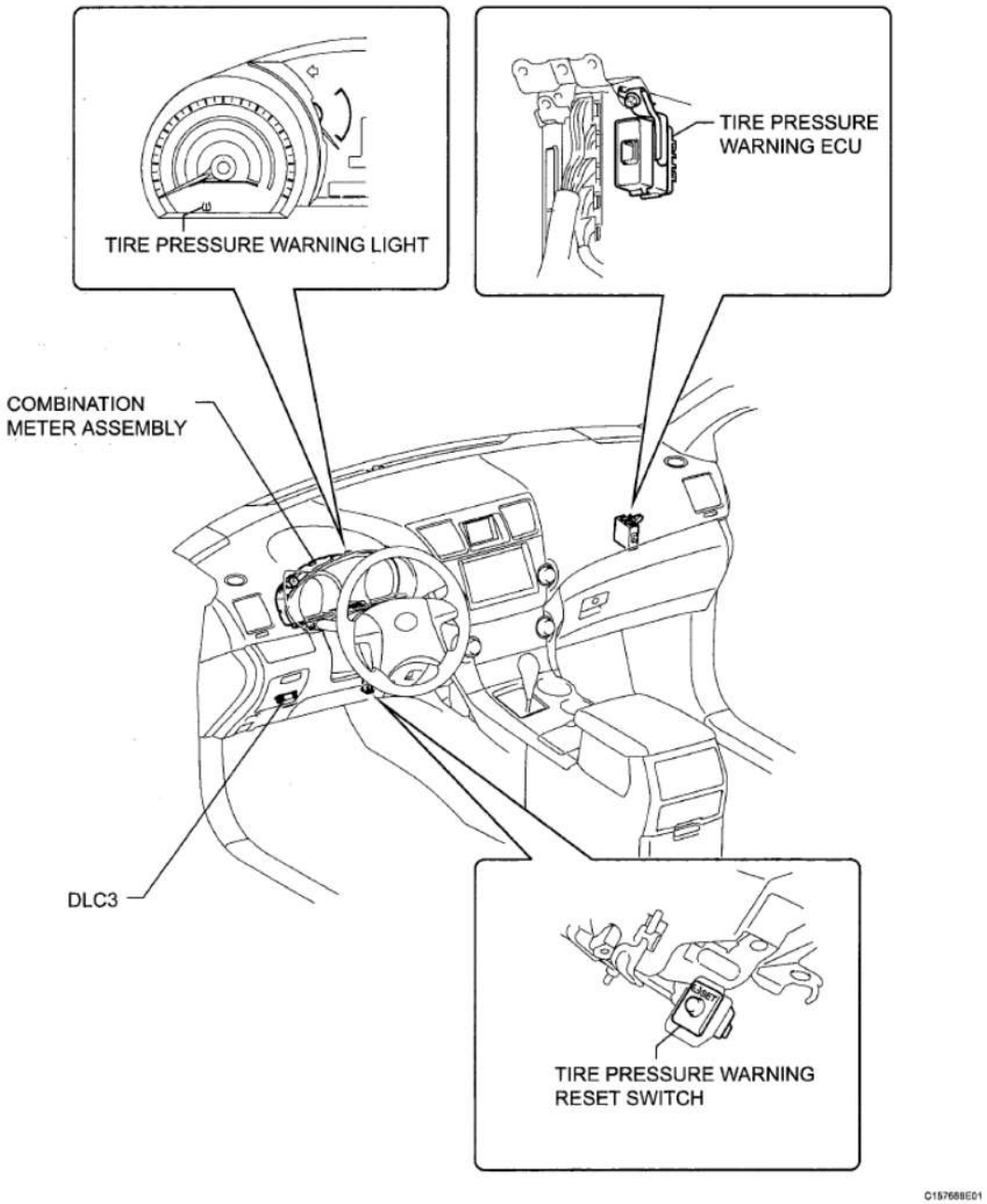


Fig. 6: Identifying Tire Pressure Warning System Parts Location (1 Of 2)
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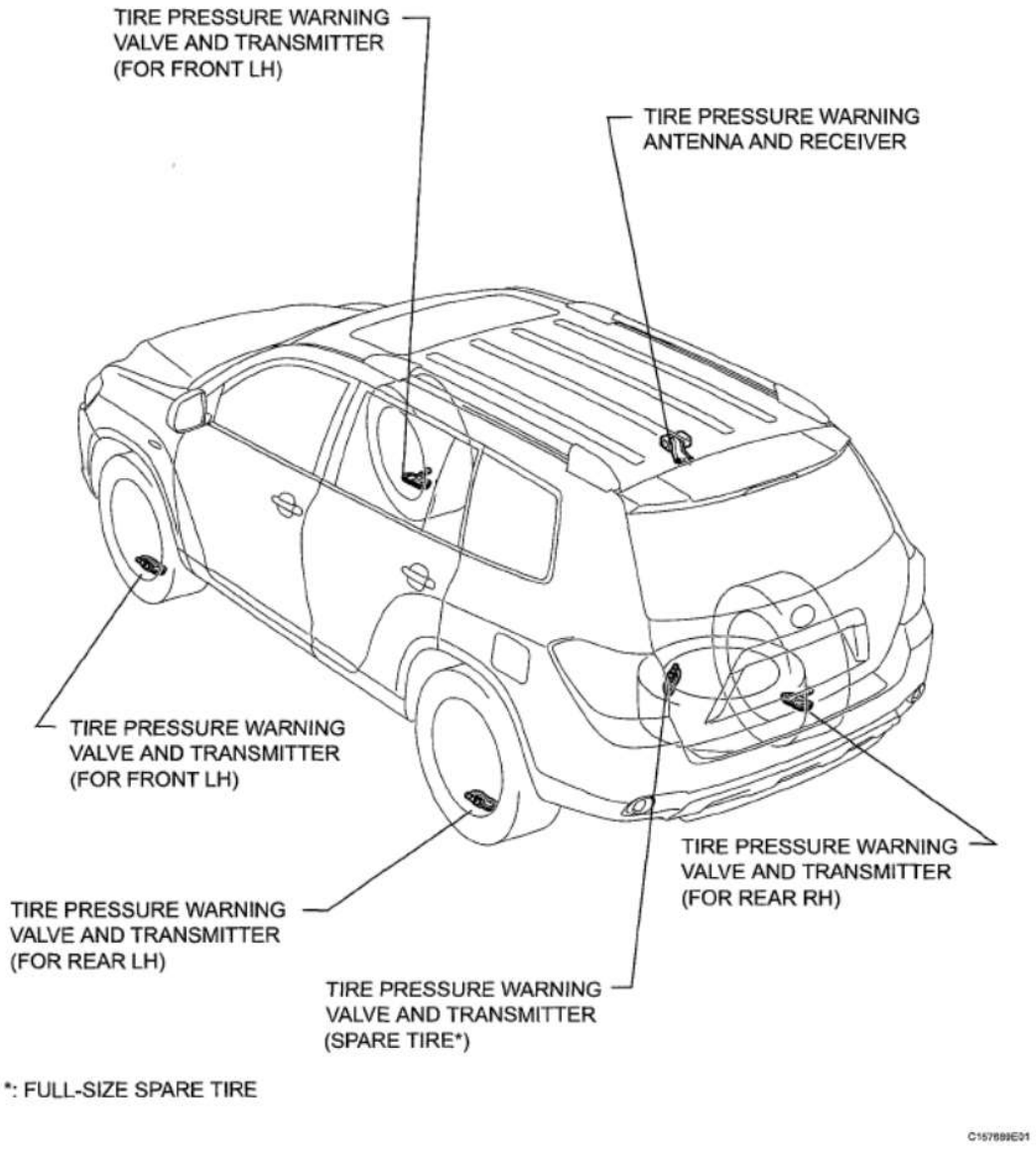


Fig. 7: Identifying Tire Pressure Warning System Parts Location (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

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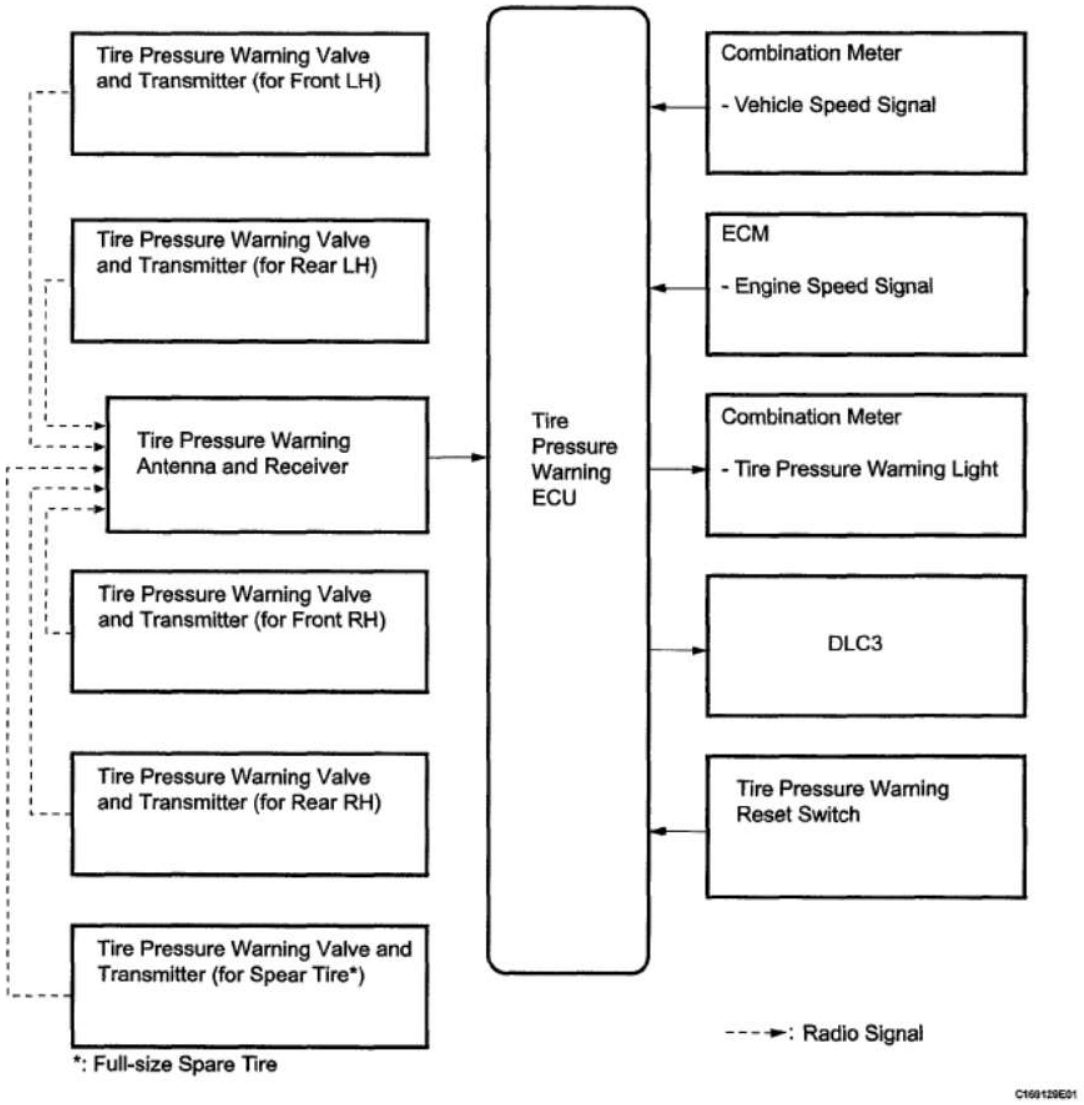


Fig. 8: Tire Pressure Warning System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

Each tire pressure warning valve and transmitter sends information on the temperature inside the tire, the ID, and the tire pressure.

SYSTEM DESCRIPTION

1. **DESCRIPTION OF SYSTEM**
   a. Each tire pressure warning valve and transmitter is equipped with a tire pressure sensor and a transmitter and is installed in each tire and wheel. The sensor measures the tire pressure. The measured value and transmitter ID are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU from the tire pressure

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warning antenna and receiver. If the transmitter ID has already been registered, the ECU compares the measured air pressure value with the standard value. When the value is less than the standard value registered in the tire pressure warning ECU, the warning light on the combination meter turns on. The tire pressure warning reset switch addresses the differences in the air pressure settings by the type of tires.

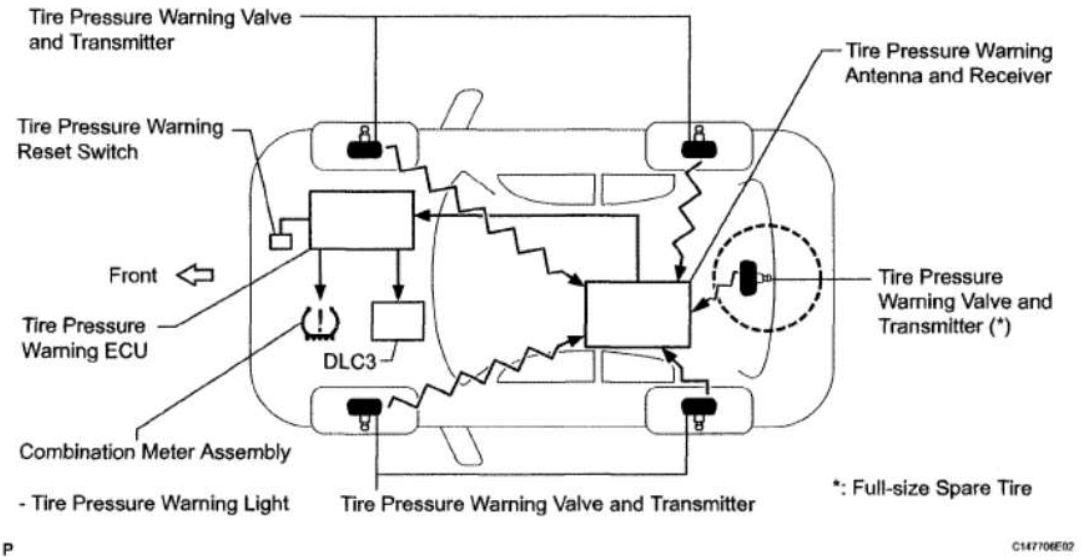


Fig. 9: Tire Pressure Warning Valve And Transmitter System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INITIAL CHECK**
   a. After the ignition switch is turned on (IG), the tire pressure warning light turns on for 3 seconds and then turns off.

HINT:

If the warning light does not turn on for 3 seconds, troubleshoot the tire pressure warning light circuit (See **TIRE PRESSURE WARNING LIGHT CIRCUIT**).

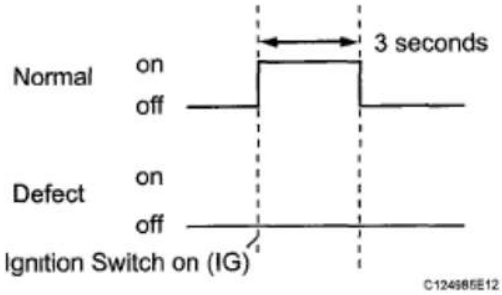


Fig. 10: Ignition Switch Blinking Pattern
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3. **WHEN TIRE PRESSURE WARNING LIGHT IS LIT**
   a. When the tire pressure warning light does not go off, or when it comes on during driving, check tire pressure. If the tire pressure warning light comes on after adjusting the tire pressure, the tire may have a slow air leak.
   b. The system will be disabled in the following conditions: (When the condition becomes normal, the system will work properly.)
      - The tires without tire pressure warning valve and transmitters are used.
      - The ID of a tire pressure warning valve and transmitter has not been registered in the ECU.
      - The tire pressure is abnormally high (absolute pressure: 600 kPa (6 kgf/cm^2 , 87 psi) or more; relative pressure: 500 kPa (5 kgf/cm^2 , 72.5 psi) or more).
      - The battery of the sensor has been depleted.
   c. The system may be disabled in the following conditions: (When the condition becomes normal, the system will work properly.)
      - Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.
      - A radio device of similar frequency is used in the vehicle.
      - A film or window tint that may interfere with radio waves is attached on the glass.
      - A large amount of snow or ice is stuck to the vehicle, especially onto the wheels and around the wheel wells.
      - Use of non-genuine wheels may result in the system failure or air-leak.
      - Tire chains are used.
      - If the spare tire is in a location subject to poor radio wave reception.
      - If a large metallic object which can interfere with signal reception is put in the trunk.
   d. When the full-size spare tire is not within the receivable range of the electric wave, a signal may not be received because the full-size spare tire is fixed. Accordingly, the system may not function properly. If there is a possibility that the tire pressure warning system does not receive a signal from the full-size spare tire, rotate the tire 90 to 270°.
   e. After removing and installing the ECU or a sensor, check for a diagnostic trouble code and verify that it is a normal system code.
4. **FUNCTION OF COMPONENTS**

COMPONENTS FUNCTION

Components	Function
Tire pressure warning valve and transmitter	Combined as a single unit with a disc wheel air valve, it measures tire pressure and temperature and transmits an ID number for measurement value and identification. Built-in the battery.
Tire pressure warning antenna and receiver	Receives and transmits a necessary signal from the transmitters to the tire pressure warning ECU.
Tire pressure warning ECU	Receives a signal from the receiver and identifies it as vehicle's own signal. If the measured value is equal to or lower than the specified value, it transmits a signal to illuminate the tire pressure warning light on the combination meter comes on.

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Tire pressure warning light	Located in the combination meter, it informs the driver of lowered tire pressure and system failure.
Tire pressure warning reset switch	Enters the initialization mode.

5. **TIRE PRESSURE WARNING RESET SWITCH**
   - By operating the tire pressure warning reset switch, the tire pressure warning ECU can be set to issue a warning at an inflation pressure that corresponds to the standard pressure of tires.
   - Therefore, the dealer must set the warning threshold to the proper value in order to comply with the local regulations.
   - Operate the tire pressure warning reset switch only after the inflation pressures of all tires have been adjusted on the vehicle.
   - To initialize the system, press and hold the tire pressure warning reset switch for 3 seconds or longer with the ignition switch on (IG). After the initialization process has started, the warning light blinks 3 times (1 second on, 1 second off).
   - During initialization, the tire pressure warning valve and transmitter measures the inflation pressure of the tire, and registers the signals that are transmitted into the tire pressure warning ECU at a frequency of once per 3 minutes. The initialization process is completed when signals from all the tires have been received. It takes a few minutes.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use the following procedures to troubleshoot the tire pressure warning system.
- *: Use Techstream.

1. **VEHICLE BROUGHT TO WORKSHOP**
2. **CUSTOMER PROBLEM ANALYSIS**
   a. Interview the customer to confirm the trouble.

   HINT:

   It is important to collect as much specific information as possible from the customer to allow for a quick repair.

3. **ADJUST TIRE PRESSURE**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Read the "ID Tire Inflation Pressure" values.
   f. Adjust all tire pressures to the standard values (See **TIRE PRESSURE WARNING SYSTEM**).

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g. Check the DATA LIST (See **PROBLEM SYMPTOMS TABLE**).

HINT:

- It takes about 2 or 3 minutes to display the updated tire pressure data.
- If the problem is that the tire pressure decreases, wait until all of the tire pressure data is received by the ECU. If the data is received, the tire pressure warning light will turn off.

Result

RESULT REFERENCE

Condition	Proceed to
Tire pressure warning light remains on	A
Tire pressure warning light goes off	B

B: GO TO STEP 9

A: Go to next step

4. **CHECK FOR DTC***
   a. Check for DTCs (See **DTC CHECK/CLEAR**).

Result

RESULT REFERENCE

Result	Proceed to
DTC is output	A
DTC is not output	B

B: GO TO STEP 6

A: Go to next step

5. **DTC CHART**
   a. Refer to DIAGNOSTIC TROUBLE CODE CHART (See **DIAGNOSTIC TROUBLE CODE CHART**).

NEXT: GO TO STEP 8

6. **PROBLEM SYMPTOMS TABLE**
   a. Refer to PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**).
7. **CIRCUIT INSPECTION***
   a. Refer to ELECTRONIC CIRCUIT INSPECTION PROCEDURE (See **ELECTRONIC CIRCUIT INSPECTION PROCEDURE**).

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8. **REPAIR OR REPLACE**
   a. Repair or replace parts based on the diagnosis result.
9. **CONFIRMATION TEST**
   a. Check the DATA LIST to confirm that the tire inflation pressure has been received (See **DATA LIST/ACTIVE TEST**).
   b. Perform initialization (See **INITIALIZATION**).
   c. Confirm that the initialization has been completed.

NEXT: END

REGISTRATION

1. **DESCRIPTION OF CODE REGISTRATION**

It is necessary to register the transmitter IDs in the tire pressure warning ECU when replacing a tire pressure warning valve and transmitter and/or tire pressure warning ECU.

Prepare all transmitter ID data before starting registration.

a. Before registration
   1. When replacing the tire pressure:
      - Read the registered transmitter IDs that are stored in the old ECU using Techstream and note them down.
      - If reading stored transmitter IDs is impossible due to malfunctions of components such as the tire pressure warning antenna and receiver, remove the tires from the wheels and check the IDs located on the tire pressure warning valves and transmitters (See **TIRE PRESSURE WARNING SYSTEM**).
   2. When replacing a tire pressure warning valve and transmitter:
      - Take note of the 7-digit number (transmitter ID) written on the tire pressure warning valve and transmitter.

Tire Pressure Warning Valve and Transmitter:

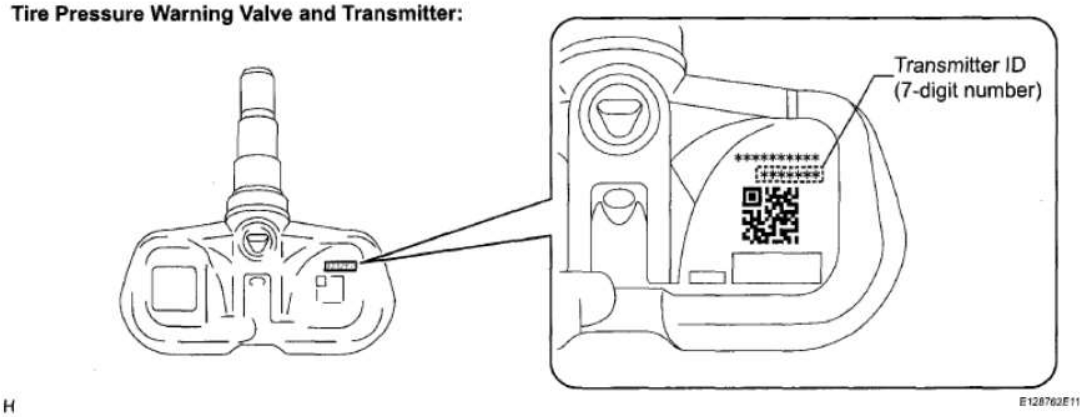


Fig. 11: Identifying 7-Digit Number Transmitter ID

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NOTE: The transmitter ID is written on the tire pressure warning valve and transmitter. It will be unable to be read after installing the tire onto the wheel. Therefore, take note of the transmitter ID before installing the tire onto the wheel.

2. **REGISTER TRANSMITTER ID (USING TECHSTREAM)**
   a. Set the air pressure of all tires to the specified value (See **TIRE PRESSURE WARNING SYSTEM**).
   b. Turn the ignition switch off.
   c. Connect Techstream to the DLC3.
   d. Turn the ignition switch on (IG) and turn the tester ON.
   e. Enter the menu items in this order: Chassis/Tire Pressure Monitor/Utility/ID Registration.
   f. Perform the following procedures displayed on the screen.
   g. Confirmation of transmitter ID registration.
      1. Enter the menu items in this order: Chassis/Tire Pressure Monitor/Data List.
      2. Read the "ID Tire Inflation Pressure" values.
      3. Confirm that the data of tire pressure of all tires are displayed on the screen.

NOTE:

- **It may take up to about 2 or 3 minutes to update the tire pressure data. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2125/25 (See DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1).**
- **If the IDs have not been registered, DTC C2171/71 is set in the tire pressure warning ECU after 3 minutes or more.**
- **If normal pressure values are displayed, the IDs have been registered correctly.**
- **If the tire pressure values are not displayed after several minutes, the IDs may be incorrect or the system may have a malfunction.**
- **After all IDs are registered, DTC C2126/26 (Transmitter ID not Received in Main Mode) is set in the tire pressure warning ECU and the tire pressure warning light blinks for 1 minute and then comes on. When the tire pressure warning ECU successfully receives radio waves from all the transmitters whose IDs are stored in the ECU, DTC C2126/26 is deleted and the tire pressure warning light goes off.**

INITIALIZATION

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1. **DESCRIPTION OF INITIALIZATION**
   a. Perform initialization in the following cases:
      - Before delivery of a new vehicle.
      - After replacement of the tire pressure warning ECU*.
      - After replacement of a tire pressure warning valve and transmitter*.
      - Specified tire pressure changes depending on the size or type of the tire.

   HINT:

   *: Perform initialization after the transmitter ID registration is completed (See **REGISTRATION**).

   b. Before initialization
      1. Set the all tire pressures to the specified value (See **TIRE PRESSURE WARNING SYSTEM**).

      NOTE: Make sure the tires are cooled down.

2. **INITIALIZATION PROCEDURE**
   a. Turn the ignition switch on (IG).
   b. Press and hold the tire pressure warning reset switch for 3 seconds or more so that the tire pressure warning light blinks 3 times.

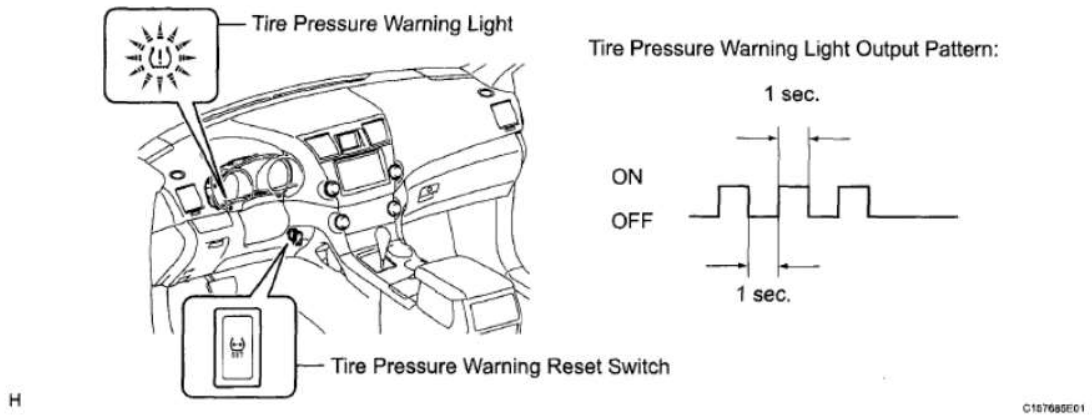


Fig. 12: Tire Pressure Warning Light Blinking Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   c. Turn the ignition switch off.
   d. Connect Techstream to the DLC3.
   e. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   f. Check that the initialization has been completed.
   g. Confirm that the tire pressure data of all tires are displayed on the tester screen.

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NOTE:

- **The initialization is normally completed within 2 to 3 minutes.**
- **If the initialization has not been completed successfully, DTC C2177/77 will be set after the vehicle is driven for 20 minutes or more.**
- **The initialization can be terminated by connecting terminals TC and CG of the DLC3.**

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 ,-14psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received(1)
ID4 Tire	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1.0	Actual tire	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0

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Inflation Pressure	kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	inflation pressure	kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

HINT:

- The initialization is complete when the DATA LIST "ID Tire Inflation Pressure" display shows the correct pressures.
- (1) It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed af few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/2 C2125/25 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**).

TEST MODE PROCEDURE

1. **ENTER TEST MODE**

HINT:

- Operation of the tire pressure warning reset switch can be checked in TEST MODE.
- During TEST MODE, the system is not initialized by pushing the tire pressure warning reset switch. The circuit of the tire pressure warning reset switch can be inspected during this mode.
  a. Turn the ignition switch off.
  b. Connect Techstream to DLC3.
  c. Turn the ignition switch on (IG).
  d. Check that the tire pressure warning light comes on for 3 seconds and then goes off.
  e. Turn the tester on.
  f. Enter the following menus: Chassis/Tire Pressure Monitor/Utility/Signal Check.
  g. Confirm that the tire pressure warning light in the combination meter blinks at 0.125-second intervals.

2. **PERFORM SIGNAL CHECK**

HINT:

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- When entering signal check mode, the tire pressure warning ECU sets all the signal check DTCs first. After completing signal check for each inspection item, the DTCs for systems that are determined to be normal by the tire pressure warning ECU will be erased.

  The DTCs for other inspection items may not be erased when only a certain signal is inspected.

- When signal check returns to normal mode, all the signal check DTCs will be erased.

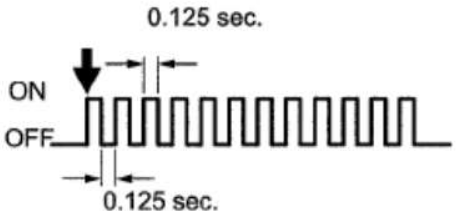


Fig. 13: Combination Meter Blinking Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Turn the ignition switch off.
b. Connect Techstream to DLC3.
c. Turn the ignition switch on (IG) and turn the tester on.
d. Enter the following menus: Chassis/Tire Pressure Monitor/Utility/Signal Check.

   HINT:

   Every time the test mode DTC clearing conditions are satisfied, the tire pressure warning light comes on for 1 second. Then, the tire pressure warning light blinks at 0.125-second intervals.

e. Start the engine and allow it to run at 1000 rpm for 3 seconds or more to check the engine speed signal (C2194/94).
f. Drive the vehicle at 12 mph (20 km/h) or more for 3 seconds or more to check the vehicle speed signal (C2191/91).
g. Loosen the valve core and rapidly reduce the pressure (at least 40 kPa (0.41 kg/cm^2 , 5.8 psi) within 30 seconds or more) to check the transmitter data (C2181/81 to C2185/85).

   HINT:

   The transmitter ID can be transmitted by rapidly reducing the tire pressure.

h. Check that the tire pressure warning system test mode DTCs are erased.

DTC TEST MODE REFERENCE

Test Mode DTC	Test Signal	Test Mode DTC Clearing Condition

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C2181/81 to **C2185/85**	Transmitter Data	Data is received from the transmitter which has a registered ID in the tire pressure warning ECU
C2191/91	Vehicle Speed Signal	Vehicle speed of 12 mph (20 km/h) or more is detected for 3 seconds or more
C2194/94	Engine Speed Signal	Engine speed of 1000 rpm or more is detected for 3 seconds or more

i. Check the tire pressure warning reset switch.
   1. Press the tire pressure warning reset switch.
   2. Check the tire pressure warning indicator light.

TIRE PRESSURE WARNING RESET SWITCH SIGNAL REFERENCE

Test Signal	Normal Condition
Tire Pressure Warning Reset Switch	• Switch ON: TPWS indicator comes on • Switch OFF: TPWS indicator blinks at 0.125 sec. intervals

j. Result

HINT:

After the signal check is completed, check for a test mode DTC to confirm the system status.

DTC TEST MODE REFERENCE

Condition	Procedure
Test mode DTC is output	Repair the faulty part and enter SIGNAL CHECK again
Test mode DTCs are cleared	No problem

k. End of SIGNAL CHECK
   1. After completing the test mode (SIGNAL CHECK), turn the ignition switch off and disconnect the tester.

l. DTC of SIGNAL CHECK (TEST DIAGNOSIS)
   1. If a trouble code is displayed during the test mode DTC check, check the circuit listed for that code. For details of each code, refer to the "Refer to" below.

DTC CHART

DTC No.	Detection Item	Trouble Area
C2181/81	Transmitter ID1 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector
C2182/82	Transmitter ID2 not received	
C2183/83	Transmitter ID3 not received	
C2184/84	Transmitter ID4 not received	

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C2185/85	Transmitter ID5 not received	• Tire pressure warning ECU
C2191/91	Vehicle speed signal error	• Combination meter assembly • Vehicle speed sensor • Harness or connector • Tire pressure warning ECU
C2194/94	Engine speed signal error	• ECM • Harness or connector • Tire pressure warning ECU

PROBLEM SYMPTOMS TABLE

HINT:

- Use the table below to help determine the cause of the problem symptom. The potential causes of the symptoms are listed in order of probability in the "Suspected Area" column of the table. Check each symptom by checking the suspected areas in the order they are listed. Replace parts as necessary.
- Inspect the fuses and relays related to this system before inspecting the suspected areas below.

Tire Pressure Warning System:

PROBLEM SYMPTOMS

Symptom	Suspected Area	Refer to
Tire pressure warning light does not illuminate, despite tire pressure decreasing	Check DATA LIST (Tire inflation pressure)	**DATA LIST/ACTIVE TEST**
	ID code check (Registration)	**REGISTRATION**
	Initialization	**INITIALIZATION**
Tire pressure warning light remains illuminated (Goes off during initial check)	Tire pressure warning light circuit	**TIRE PRESSURE WARNING LIGHT CIRCUIT**
	ECU power source circuit	**ECU POWER SOURCE CIRCUIT**
Tire pressure warning light remains illuminated (Comes on during initial check)	Check DATA LIST (Tire inflation pressure)	**DATA LIST/ACTIVE TEST**
	Tire pressure adjustment	**TIRE PRESSURE WARNING SYSTEM**
	ID code check (Registration)	**REGISTRATION**
	Initialization	**INITIALIZATION**
Initialization cannot be done	Tire pressure warning reset switch circuit	**TIRE PRESSURE WARNING RESET SWITCH CIRCUIT**

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DTC check cannot be done	TC and CG terminal circuit	**TC AND CG TERMINAL CIRCUIT**
	ECU power source circuit	**ECU POWER SOURCE CIRCUIT**

TERMINALS OF ECU

1. **CHECK TIRE PRESSURE WARNING ECU**

HINT:

Inspect the connectors from the back side.

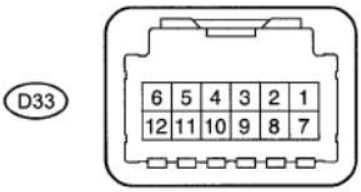


Fig. 14: Identifying D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

a. Disconnect the 011 tire pressure warning antenna and receiver connector.
b. Measure the voltage according to the value (s) in the table below.

CONNECTOR TERMINAL REFERENCE

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
D33-12 (RDA) - D33-9 (GND)	G - W-B	Tire pressure warning antenna and receiver signal	Ignition switch on (IG)	11 to 14 V

c. Connect the O11 tire pressure warning antenna and receiver connector.
d. Measure the voltage and resistance according to the value (s) in the table below. If the result is not as specified, the ECU may have a malfunction.

CONNECTOR TERMINAL REFERENCE

Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
D33-1 (CLSW) - D33-9 (GND)	P - W-B	Tire pressure warning reset switch	• Ignition switch on (IG) • Tire pressure warning reset switch on	8.5 to 15 V
			• Ignition switch on (IG) • Tire pressure warning	Below 1.5 V

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			reset switch OFF	
D33-2 (SPD) - D33-9 (GND)	L - W-B	Vehicle speed signal	Vehicle is running	Pulse generation (see waveform 1 d)
D33-3 (TC) - D33-9 (GND)	BR - W-B	TC terminal	Terminal TC is not connected	11 to 14 V
D33-4 (TACH) - D33-9 (GND)	V - W-B	Engine speed signal	Engine is running	Pulse generation (see waveform 2 e)
D33-5 (IND) - D33-9 (GND)	SB - W-B	Tire pressure warning light output signal	• Ignition switch on (IG) • Tire pressure warning light off	Below 0.5 V
		Tire pressure warning reset switch	After ignition switch is turned on (IG), tire pressure warning light illuminates for 3 seconds.	0.9 to 3.2 V
D33-6 (RF5V) - D33-9 (GND)	LG - W-B	Tire pressure warning antenna and receiver power source	Ignition switch on (IG)	4.5 to 5.5 V
D33-7 (IG) - D33-9 (GND)	B - W-B	IG power source	Ignition switch on (IG)	11 to 14 V
D33-9 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
D33-10 (SIL) - D33-9 (GND)	O - W-B	Diagnostic communication	Ignition switch on (IG)	8 to 14 V
D33-11 (GND2) - D33-9 (GND)	W - W-B	Tire pressure warning antenna and receiver ground	Always	Below 1 ohms

e. Using an oscilloscope, check waveform 1.

Waveform 1:

WAVEFORM REFERENCE

Item	Contents
Terminal	D33-2 (SPD) - D33-9 (GND)
Tool setting	5V/DIV., 20ms./DIV.
Vehicle condition	While driving at approximately 12 mph (20 km/h)

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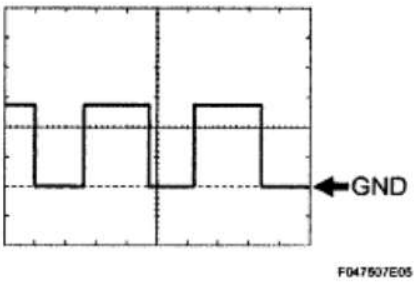


Fig. 15: Waveform Graph 1
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

f. Using an oscilloscope, check waveform 2.

Waveform 2:

WAVEFORM REFERENCE

Item	Contents
Terminal	D33-4 (TACH) - D33-9 (GND)
Tool setting	5V/DIV., 10ms./DIV.
Vehicle condition	Idling

HINT:

The wavelength becomes shorter as the engine speed increases.

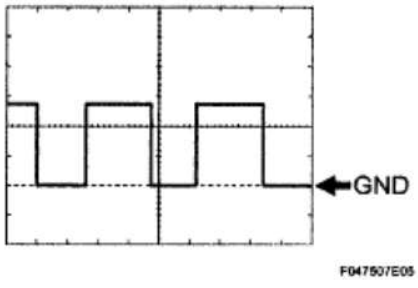


Fig. 16: Waveform Graph 2
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DIAGNOSIS SYSTEM

1. **CHECK DLC3**
   a. Check the DLC3 (See **HOW TO TROUBLESHOOT ECU CONTROLLED SYSTEMS**).
2. **DIAGNOSIS SYSTEM**
   a. Warning light and indicator
      1. When there is a problem with the tire pressure warning system, the tire pressure warning

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light blinks at 0.5-second intervals, and turns on after 1 minute

HINT:

When the malfunction has been corrected, the tire pressure warning light does not turn on.

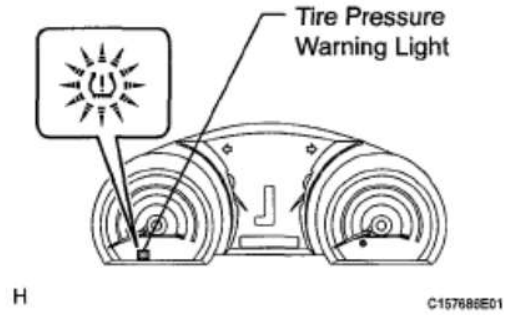


Fig. 17: Identifying Tire Pressure Warning Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

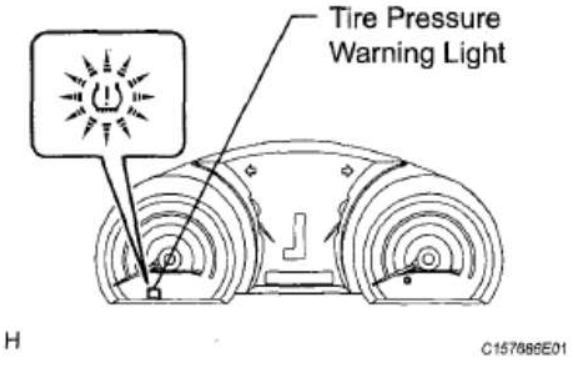
b. DTCs (Normal mode)
   1. DTCs are memorized in the tire pressure warning ECU and read by the blinks of the tire pressure warning light or by using Techstream (See **DTC CHECK/CLEAR**).

c. Test mode
   1. By switching from normal mode into test mode (input signal check), you can inspect the tire pressure warning antenna and receiver, each tire pressure warning valve and transmitter, and vehicle speed sensor (See **TEST MODE PROCEDURE**).

3. **CHECK TIRE PRESSURE WARNING LIGHT**
   a. Turn the ignition switch on (IG).
   b. Check that the tire pressure warning light comes on for 3 seconds.

If the warning check result is not normal, proceed to the troubleshooting for the tire pressure warning light circuit (See **TIRE PRESSURE WARNING LIGHT CIRCUIT**).

4. **TIRE PRESSURE WARNING LIGHT AND INDICATOR CHART**



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Fig. 18: Identifying Tire Pressure Warning Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The table below indicates the state of the tire pressure warning light and indicator after the ignition switch on (IG).

WARNING LIGHT OUTPUT PATTERN

	Immediately after turning the ignition switch on (IG)	Always						
		Warning light output pattern						
	Comes on for 3 sec.	Goes off	Comes on	Blinks for 1 minute and then illuminates ((1))	Blinks ((2))	Blinks ((3))	Blinks ((4))	Outputs DTC
Normal	o	o	-	-	-	-	-	-
Low tire pressure	o	-	o	-	-	-	-	-
System fail	o	-	-	o	-	-	-	-
Test mode	o	-	-	-	o	-	-	-
Initialization	o	-	-	-	-	o	-	-
ECU connector poorly connected	-	-	-	o ((5))	-	-	-	-
TC ground (DTC is output)	o	-	-	-	-	-	-	o
TC ground (DTC is not output)	o	-	-	-	-	-	o	-

(1) Comes on and goes off repeatedly at 0.5-second intervals, and remains on after 1 minute.

(2) Comes on and goes off repeatedly at 0.125-second intervals.

(3) Blinks 3 times (1 second on, 1 second off).

(4) Turns on and goes off repeatedly at 0.25-second intervals.

(5) When determining if there is a short circuit (10 seconds), the light is off. Then it blinks at 0.5 second intervals, and remains on after 1 minute.

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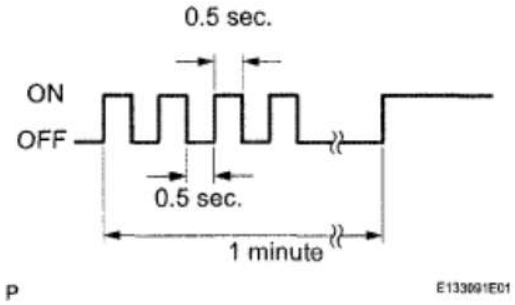


Fig. 19: Tire Pressure Warning Light Blinking Pattern (1 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

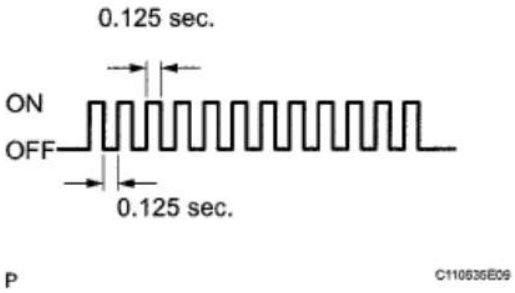


Fig. 20: Tire Pressure Warning Light Blinking Pattern (2 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

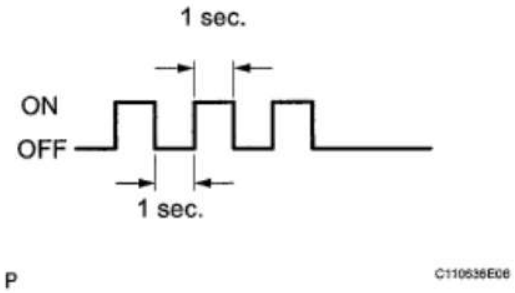


Fig. 21: Tire Pressure Warning Light Blinking Pattern (3 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

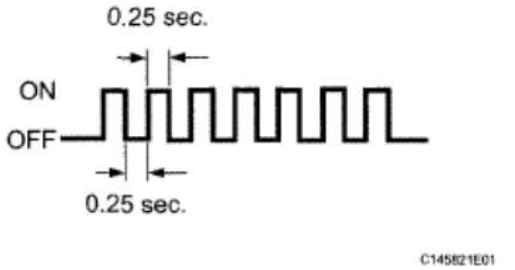


Fig. 22: Tire Pressure Warning Light Blinking Pattern (4 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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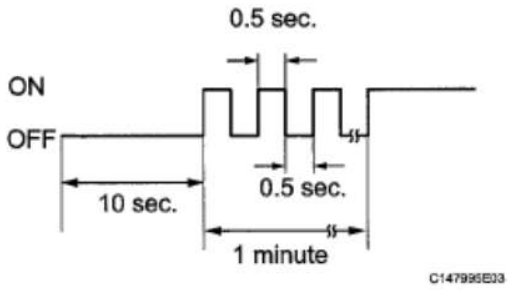


Fig. 23: Tire Pressure Warning Light Blinking Pattern (5 Of 5)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

DTC CHECK/CLEAR

1. **DTC CHECK (USING SST CHECK WIRE)**
   a. Turn the ignition switch off.

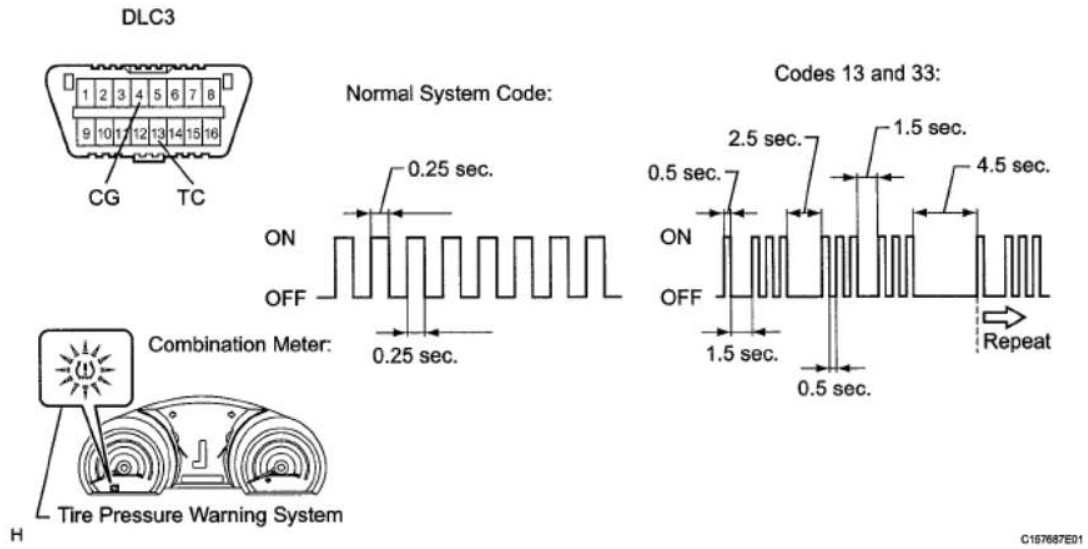


Fig. 24: Identifying Tire Pressure Warning Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Using SST, connect terminals TC and CG of the DLC3.

      SST 09843-18040

   c. Turn the ignition switch on (IG).
   d. Read and record any DTCs from the tire pressure warning light on the combination meter. Refer to the illustration as examples of the normal system code and codes 13 and 33.

      HINT:

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- If the tire pressure warning light does not indicate any DTCs or the normal system code, inspect the tire pressure warning light circuit or TC and CG terminal circuit.

TROUBLESHOOTING CHART

Trouble Area	See procedure
Tire pressure warning light circuit	**TIRE PRESSURE WARNING LIGHT CIRCUIT**
TC and CG terminal circuit	**TC AND CG TERMINAL CIRCUIT**

- If 2 or more malfunctions are indicated at the same time, the lowest numbered DTC is displayed first.

e. Refer to the Diagnostic Trouble Code Chart (See **DIAGNOSTIC TROUBLE CODE CHART**) for DTC information.

f. After completing the check, turn the ignition switch off and remove SST from the DLC3.

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2. **DTC CHECK (USING TECHSTREAM)**

a. Turn the ignition switch off.

b. Connect Techstream to the DLC3.

c. Turn the ignition switch on (IG) and turn the tester on.

d. Enter the following menus: Chassis/Tire Pressure Monitor/Trouble Codes.

e. Read the DTCs following the prompts on the tester screen.

HINT:

Refer to the Techstream operator's manual for further details.

3. **CLEAR DTC**

HINT:

After repairing the malfunctions, clear the DTCs.

a. Turn the ignition switch off.

b. Connect Techstream to the DLC3.

c. Turn the ignition switch on (IG) and turn the tester on.

d. Enter the following menus: Chassis/Tire Pressure Monitor/Trouble Codes.

e. Clear the DTCs following the prompts on the tester screen.

HINT:

Refer to the Techstream operator's manual for further details.

DATA LIST/ACTIVE TEST

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1. **READ DATA LIST**

HINT:

Using Techstream to read the DATA LIST allows the values or states of switches, sensors, actuators and other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the DATA LIST information early in troubleshooting is one way to save diagnostic time.

NOTE: In the table below, the values listed under "Normal Condition" are reference values. Do not depend solely on these reference values when deciding whether a part is faulty or not.

a. Turn the ignition switch off.
b. Connect Techstream to the DLC3.
c. Turn the ignition switch on (IG) and turn the tester on.
d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Mode Status	Tire pressure warning system mode/NORMAL or TEST	NORMAL: Normal mode TEST: Test mode	-
Main Tire	Number of main tire ID that are registered/ 0,1, 2, 3, 4, 5	0 to 5 displayed	-
Vehicle Speed	Vehicle speed reading/min.: 0 km/h (0 mph), max.: 255 km/h (158 mph)	Actual vehicle speed	Speed indicated on the combination meter
Registered ID1 Code	Registered ID1 code/min.: 0, max.: FFFFFFF*1	The ID No. registered in the transmitter ID1 is displayed	-
Registered ID2 Code	Registered ID2 code/min.: 0, max.: FFFFFFF*1	The ID No. registered in the transmitter ID2 is displayed	-
Registered ID3 Code	Registered ID3 code/min.: 0, max.: FFFFFFF*1	The ID No. registered in the transmitter ID3 is displayed	-
Registered ID4 Code	Registered ID4 code/min.:	The ID No. registered in the transmitter ID4 is	-

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	0, max.: FFFFFFF*1	displayed	
Registered ID5 Code	Registered ID5 code/min.: 0, max.: FFFFFFF*1	The ID No. registered in the transmitter ID5 is displayed	-
ID Transmission Status	ID code transmission status/FINISH or NOW	FINISH or NOW	-
Initialization Switch	Tire pressure warning reset switch/ON, OFF	ON: Switch on OFF: Switch off	-
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi),		If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14

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ID4 Tire Inflation Pressure	Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	psi) is displayed for relative pressure, data has not been received.*
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID1 Temperature in Tire	ID1 temperature in tire/min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID2 Temperature in Tire	ID2 temperature in tire/min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID3 Temperature in Tire	ID3 temperature in tire/min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If-40°C (-40°F) is displayed, data has not been received.
ID4 Temperature in Tire	ID4 temperature in tire/min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID5 Temperature in Tire	ID5 temperature in tire/min.: -40°C (-40°F), max.: 215°C (419°F)	Actual tire temperature	If -40°C (-40°F) is displayed, data has not been received.
ID1 Battery Voltage	ID1 battery voltage/OVER or LESS	Over	-
ID2 Battery Voltage	ID2 battery voltage/OVER or LESS	Over	-
ID3 Battery Voltage	ID3 battery voltage/OVER or LESS	Over	-
ID4 Battery Voltage	ID4 battery voltage/OVER or LESS	Over	-
ID5 Battery Voltage	ID5 battery voltage/OVER or LESS	Over	-
Initialization SW Info	Tire pressure warning	With	-

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	reset switch setting information/WITH or WITHOUT		
ID1 Initial Threshold of Low-pressure	ID1 initial threshold of low-pressure/min.: -100 kPa (-1 kgf/cm^2 , -14 psi), max.: 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Tire pressure after initialization	-
ID2 Initial Threshold of Low-pressure	ID2 initial threshold of low-pressure/min.: -100 kPa (-1 kgf/cm^2 , -14 psi), max.: 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Tire pressure after initialization	-
ID3 Initial Threshold of Low-pressure	ID3 initial threshold of low-pressure/min.: -100 kPa (-1 kgf/cm^2 , -14 psi), max.: 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Tire pressure after initialization	-
ID4 Initial Threshold of Low-pressure	ID4 initial threshold of low-pressure/min.: -100 kPa (-1 kgf/cm^2 , -14 psi), max.: 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Tire pressure after initialization	-
ID5 Initial Threshold of Low-pressure	ID5 initial threshold of low-pressure/min.: -100 kPa (-1 kgf/cm^2 , -14 psi), max.: 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Tire pressure after initialization	-
Engine Speed	Engine speed reading/min.: 0 rpm, max.: 65535 rpm	Actual engine speed	Engine speed indicated on the combination meter
Number of DTC	Number of DTCs recorded/min.: 0, max.: 255	0	-
HINT: *1: Displayed only when the ID No. is not registered. *2: It may take about 2 to 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2125/25 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**).			

2. **ACTIVE TEST**

HINT:

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Using Techstream to perform ACTIVE TEST allows the meters, indicators and other items to be operated without removing any parts. This non-intrusive functional inspection can be very useful because intermittent operation may be discovered before parts or wiring is disturbed. Performing ACTIVE TEST early in troubleshooting is one way to save diagnostic time. It is possible to display the DATA LIST on Techstream during ACTIVE TEST.

a. Turn the ignition switch off.
b. Connect Techstream to the DLC3.
c. Turn the ignition switch on (IG) and turn the tester ON.
d. Enter the following menus: Body/Combination Meter/Active Test.
e. According to the display on the tester, perform the "ACTIVE TEST".

Combination Meter

TESTER DISPLAY REFERENCE

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire Pressure Warning System	Tire Pressure Warning Light	Tire pressure warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling

DIAGNOSTIC TROUBLE CODE CHART

HINT:

If a trouble code is displayed during the DTC check, inspect the trouble areas listed for that code. For details of the code, refer to the "Refer to" below.

Tire Pressure Warning System:

DIAGNOSTIC TROUBLE CODE CHART

DTC Code	Detection Item	Trouble Area	Refer to
C2111/11	Transmitter ID1 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2112/12	Transmitter ID2 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2113/13	Transmitter ID3 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2114/14	Transmitter ID4 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	

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C2115/15	Transmitter ID5 Operation Stop	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2121/21	No Signal from Transmitter ID1	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2122/22	No Signal from Transmitter ID2	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2123/23	No Signal from Transmitter ID3	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2124/24	No Signal from Transmitter ID4	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2125/25	No Signal from Transmitter ID5	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2126/26	Transmitter ID not Received in Main Mode	1. ID registration failure 2. Tire pressure warning valve and transmitter 3. Tire pressure warning antenna and receiver 4. Harness or connector	

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		5. Tire pressure warning ECU	
C2141/41	Transmitter ID1 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2142/42	Transmitter ID2 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2143/43	Transmitter ID3 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure waning ECU	
C2144/44	Transmitter ID4 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2145/45	Transmitter ID5 Error	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU	
C2165/65	Abnormal Temperature Inside ID1 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	
C2166/66	Abnormal Temperature Inside ID2 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	
C2167/67	Abnormal Temperature Inside ID3 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	
C2168/68	Abnormal Temperature Inside ID4 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	
C2169/69	Abnormal Temperature Inside ID5 Tire	1. Tires 2. Tire pressure warning valve and transmitter 3. Tire pressure warning ECU	
C2171/71	Transmitter ID not Registered	Tire pressure warning ECU	
		1. Combination meter	

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C2173/73	Vehicle Speed or Engine Speed Signal Malfunction	2. ECM 3. Harness or connector 4. Tire pressure warning ECU	
C2176/76	Receiver Error	1. Tire pressure warning antenna and receiver 2. Harness or connector 3. Tire pressure warning ECU	
C2177/77	Initialization not Completed	1. Tire pressure warning valve and transmitter 2. Tire pressure warning ECU 3. Tire pressure warning antenna and receiver 4. Harness or connector	
C2181/81	Transmitter ID1 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2182/82	Transmitter ID2 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2183/83	Transmitter ID3 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2184/84	Transmitter ID4 not Received (Test Mode DTC)	1. Tire pressure warning valve and transmitter 2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
		1. Tire pressure warning valve and transmitter	

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C2185/85	Transmitter ID5 not Received (Test Mode DTC)	2. Tire pressure warning antenna and receiver 3. Harness or connector 4. Tire pressure warning ECU	
C2191/91	Vehicle Speed Signal Error (Test Mode DTC)	1. Combination meter 2. Vehicle speed sensor 3. Harness or connector 4. Tire pressure warning ECU	
C2194/94	Engine Speed Signal Error (Test Mode DTC)	1. ECM 2. Harness or connector 3. Tire pressure warning ECU	

DTC C2111/11 TRANSMITTER ID1 OPERATION STOP; DTC C2112/12 TRANSMITTER ID2 OPERATION STOP; DTC C2113/13 TRANSMITTER ID3 OPERATION STOP; DTC C2114/14 TRANSMITTER ID4 OPERATION STOP; DTC C2115/15 TRANSMITTER ID5 OPERATION STOP

DESCRIPTION

The tire pressure warning valve and transmitters that are installed in the tire and wheel assemblies measure the tire pressures. The measured values are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU. The ECU compares the measured air pressure values with the air pressure threshold. When the measured air pressure value is less than this threshold, the warning light in the combination meter comes on. The tire pressure warning ECU stores a DTC when the tire pressure warning valve and transmitter stops transmitting signals. At this time, forcibly transmit the signals by releasing the tire pressure rapidly. The stored DTC is cleared when the signal transmission is resumed.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2111/11 C2112/12 C2113/13 C2114/14 C2115/15	Tire pressure warning valve and transmitters stop transmitting signals	• Tire pressure warning valve and transmitter • Tire pressure warning ECU

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

INSPECTION PROCEDURE

NOTE: it is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

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1. **PERFORM FORCED TRANSMISSION OF TRANSMITTER ID OF ALL WHEELS**
   a. Set the tire pressure to the specified value (See **TIRE PRESSURE WARNING SYSTEM**).
   b. Turn the ignition switch off.
   c. Connect Techstream to the DLC3.
   d. Turn the ignition switch on (IG) and turn the tester on.
   e. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   f. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa		

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ID4 Tire Inflation Pressure	(0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: It may take about 2 to 3 minutes until the values are displayed. If the values are not displayed after about 2 to 3 minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2125/25 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**).			

g. Rapidly release the pressures from each wheel by approximately 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds.

h. Check that each tire pressure data displayed on the Techstream screen has changed.

OK:

Each tire pressure data displayed on the Techstream screen will change to the value of the tire pressure.

NOTE:

- **It takes about 2 to 3 minutes to display the updated tire pressure data.**
- **When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270° (including the spare tire). Then rapidly release the tire pressure and recheck the data.**

i. After confirming that all of the tire pressure data displayed on the Techstream screen has changed, set the tire pressure to the appropriate specified values.

HINT:

If the tire pressure data displayed on the Techstream screen has not changed after rechecking, perform the

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inspection for malfunctions in transmission or reception function (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**).

NG: GO TO TRANSMITTER AND RECEIVER INSPECTION PROCEDURE

OK: END

DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4; DTC C2125/25 NO SIGNAL FROM TRANSMITTER ID5; DTC C2181/81 TRANSMITTER ID1 NOT RECEIVED (TEST MODE DTC); DTC C2182/82 TRANSMITTER ID2 NOT RECEIVED (TEST MODE DTC); DTC C2183/83 TRANSMITTER ID3 NOT RECEIVED (TEST MODE DTC); DTC C2184/84 TRANSMITTER ID4 NOT RECEIVED (TEST MODE DTC); DTC C2185/85 TRANSMITTER ID5 NOT RECEIVED (TEST MODE DTC)

DESCRIPTION

The tire pressure warning valve and transmitters that are installed in the tire and wheel assemblies measure the tire pressures. The measured values are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU. The ECU compares the measured air pressure values with the air pressure threshold. When the measured air pressure value is less than this threshold, the warning light in the combination meter turns on.

The tire pressure warning valve and transmitters constantly send radio waves to the tire pressure warning antenna and receiver.

Under the conditions below, the tire pressure warning antenna and receiver may be unable to receive the signals from the tire pressure warning valve and transmitters, causing a DTC to be stored.

- Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.
- Devices using similar radio frequencies are used in the vehicle.
- The ID of the tire pressure warning valve and transmitter is mistyped during registration.
- A tire/wheel/transmitter from a different vehicle is installed.

HINT:

When no transmitter ID is received from a tire pressure warning valve and transmitter for a total of 20 minutes while the vehicle speed is more than 8 km/h (5 mph) or no transmitter ID is received from all the tire pressure warning valve and transmitters for a total of 20 minutes, DTCs will be set.

DTCs from C2121/21 to C2125/25 can be cleared by using the tester or when the tire pressure warning valve and transmitter sends a normal signal. DTCs from C2181/81 to C2185/85 can be cleared when the transmitter in the tire pressure warning valve and transmitter sends a forced transmission signal or test mode ends. DTCs from C2181/81 to C2185/85 are output only in test mode.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area

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C2121/21 **C2122/22** **C2123/23** **C2124/24** **C2125/25**	Following condition (a) or (b) is met: a. When all conditions below are met: • Tire pressure warning valve and transmitter is not in stop mode. • Any transmitter ID is not received from tire pressure warning valve and transmitters. • For 20 minutes or more, vehicle speed is more than 8 km/h (5 mph) or no vehicle speed signal or engine speed signal is received. b. When all conditions below are met: • Tire pressure warning valve and transmitter is not in stop mode. • No transmitter ID is received from tire pressure warning valve and transmitters for 20 minutes or more.	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU
C2181/81 C2182/82 C2183/83 C2184/84 C2185/85	Test mode procedure is performed.	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU

NOTE: When DTCs C2121/21 to C2125/25 are set, DTC C2173/73 may be set simultaneously. In such cases, troubleshoot C2173/73 first, then troubleshoot DTCs C2121/21 to C2125/25.

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

WIRING DIAGRAM

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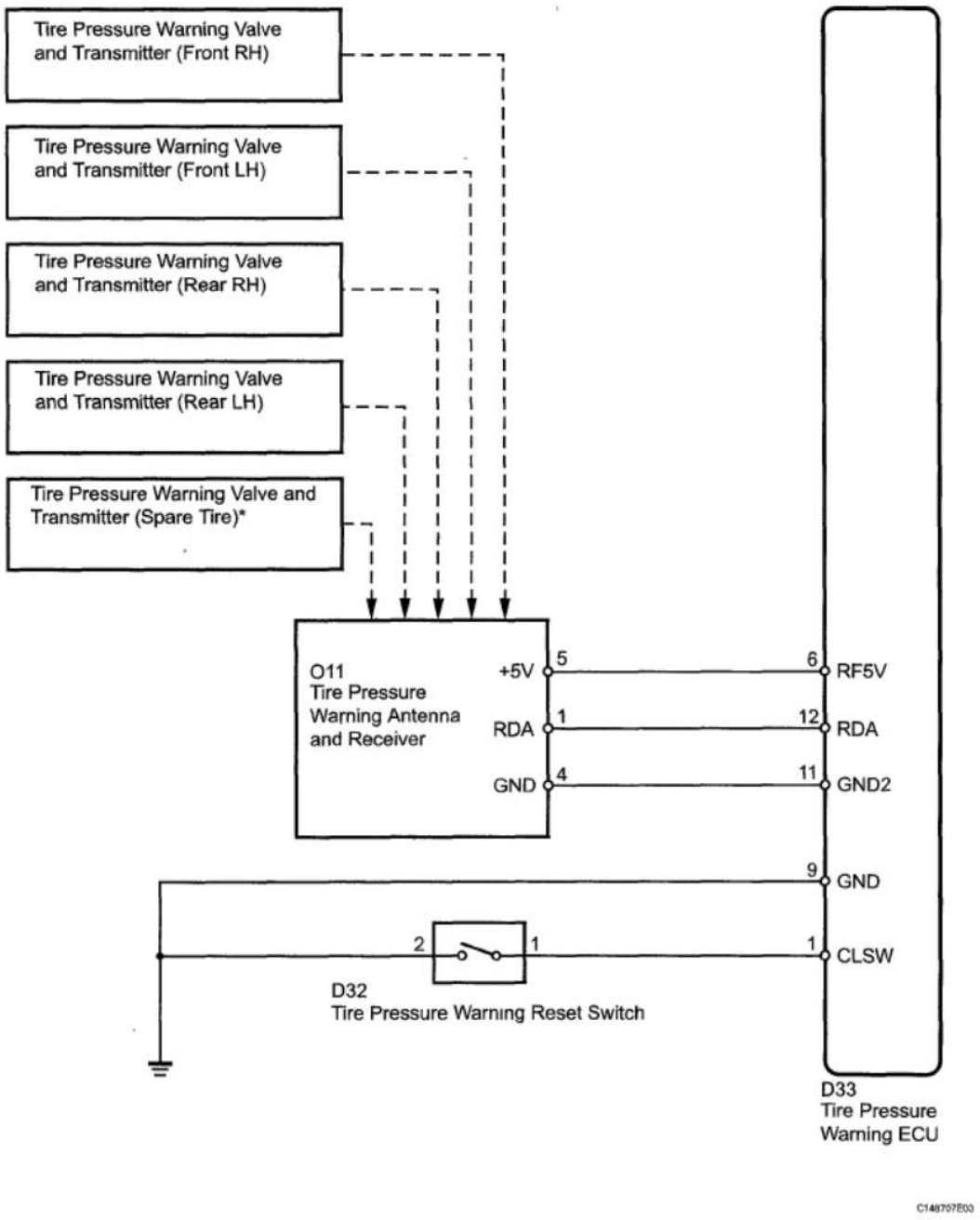


Fig. 25: Tire Pressure Warning Valve - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after**

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registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

1. **READ OUTPUT DTC (DTC C2173/73)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Trouble Codes.
   e. Read the DTCs.

Result

RESULT REFERENCE

Result	Proceed to
DTC C2173/73 is not output	A
DTC C2173/73 is output	B

NOTE: When DTC C2173/73 is output, troubleshoot that DTC first. Then troubleshoot DTCs C2121/21 to C2124/24.

B: GO TO DTC C2173/73 (See **DTC C2173/73 VEHICLE SPEED OR ENGINE SPEED SIGNAL MALFUNCTION**)

A: Go to next step

2. **CHECK FREQUENCY RECEIVING CONDITION**
   a. Check that the vehicle is located in an area such as described below:
      1. Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.

         HINT:

         If the vehicle is located in an area described above, the tire pressure warning light may turn on only in a particular area due to interfering radio frequencies.

      2. Devices using similar radio frequencies are used in the vehicle.

OK:

Facilities, or devices that use similar radio frequencies are not located in the vicinity of the vehicle.

HINT:

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Radio transmissions may be interrupted due to the surroundings, or devices installed by the user.

NG: CHECK IF ANY DEVICE IS INSTALLED BY USER

OK: Go to next step

3. **IDENTIFY TRANSMITTER CORRESPONDING TO DTC**
   a. Set the tire pressure to the appropriate specified values (See **TIRE PRESSURE WARNING SYSTEM**).
   b. Turn the ignition switch off.
   c. Connect Techstream to the DLC3.
   d. Turn the ignition switch on (IG) and turn the tester on.
   e. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   f. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1.0 kgf/cm^2 , -14 psi)	Actual tire inflation	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is

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Pressure	max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	pressure	displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: (1) It may take about 2 or 3 minutes until the values are displayed.			

g. Rapidly reduce the tire pressure for each wheel by at (east 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds.

h. Check the DATA LIST.

NOTE:

- **It takes about 2 or 3 minutes to display the updated tire pressure data.**
- **When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.**
- **Record the "ID Tire Inflation Pressure" data transmitter ID that corresponds to each tire.**

i. After confirming that the "ID Tire Inflation Pressure" data for one tire (ID1 to ID5) has changed, repeat this procedure one by one. Identify the transmitter that corresponds to the DTC.

Result

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RESULT REFERENCE

Condition	Proceed to
All abnormal	A
One or more of transmitters abnormal	B
All normal	C

B: Go to step 5

C: END

A: Go to next step

4. **CHECK HARNESS AND CONNECTOR (ECU - RECEIVER)**
   a. Disconnect the D33 ECU connector.
   b. Disconnect the 011 receiver connector.
   c. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-12 (RDA) - O11-1 (RDA)	Always	Below 1 ohms
D33-11 (GND2) - O11-4 (GND)	Always	Below 1 ohms
D33-6 (RF5V) - O11-5 (+5V)	Always	Below 1 ohms
D33-12 (RDA) or O11-1 (RDA) - Body ground	Always	10 kohms or higher
D33-11 (GND2) or O11-4 (GND) - Body ground	Always	10 kohms or higher
D33-6 (RF5V) or O11-5 (+5V) -Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Tire Pressure Warning ECU)



Front view of wire harness connector:
(to Tire Pressure Warning Antenna
and Receiver)

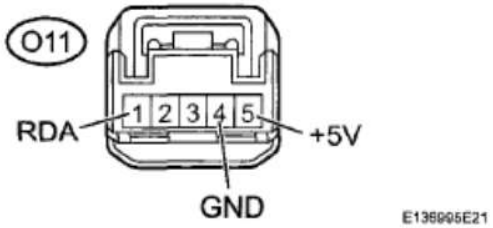


Fig. 26: Identifying D33 ECU And 011 Receiver Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

5. **CHECK TRANSMITTER ID**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Registered ID1 Code	Registered ID1 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID1 is displayed	*: Displayed only when the ID No. is not registered.
	Registered ID2		

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Registered ID2 Code	code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID2 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID3 Code	Registered ID3 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID3 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID4 Code	Registered ID4 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID4 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID5 Code	Registered ID5 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID5 is displayed	*: Displayed only when the ID No. is not registered.

f. Check the ID number on the identified transmitter by removing it from the tire and wheel.

Tire Pressure Warning Valve and Transmitter:

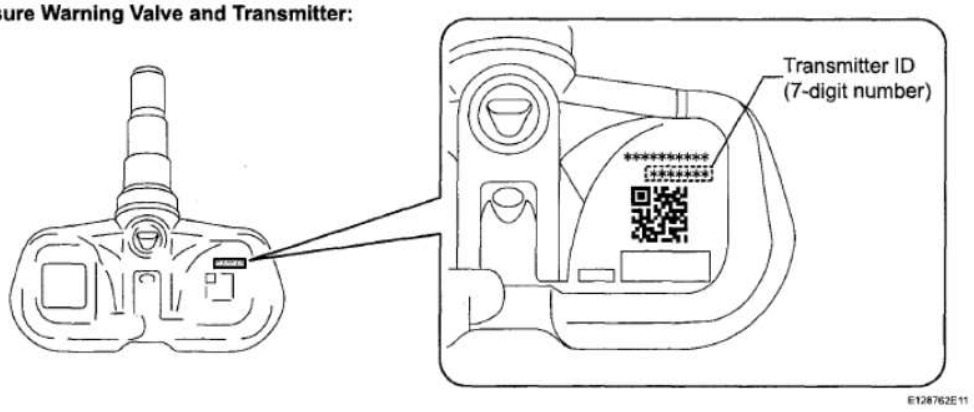


Fig. 27: Identifying 7-Digit Number Transmitter ID
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

g. Confirm that the ID number on the transmitter and recorded transmitter ID match.

Result

RESULT REFERENCE

Result	Proceed to
Match	A
Do not match	B

B: Go to step 7

A: Go to next step

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6. **REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER**
   a. Replace the tire pressure warning valve and transmitter (See **REMOVAL**).
7. **REGISTRATION OF TRANSMITTER ID**
   a. Perform registration (See **REGISTRATION**).
8. **PERFORM INITIALIZATION**
   a. Perform initialization (See **INITIALIZATION**).
9. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data

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	kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)		has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/ 637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: • (1) It may take about 2 or 3 minutes until the values are displayed. • When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.			

Result

RESULT REFERENCE

Result	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B: END

A: Go to next step

10. **REPLACE TIRE PRESSURE WARNING ANTENNA AND RECEIVER**
    a. Replace the tire pressure warning antenna and receiver (See **TIRE PRESSURE WARNING RECEIVER (W/ ANTENNA)**).
11. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**

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a. Turn the ignition switch off.
b. Connect Techstream to the DLC3.
c. Turn the ignition switch on (IG) and turn the tester on.
d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi)	Actual tire inflation	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0

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Pressure	max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	pressure	kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: • (1) It may take about 2 or 3 minutes until the values are displayed. • When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.			

Result

RESULT REFERENCE

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

NG: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

OK: END

DTC C2126/26 TRANSMITTER ID NOT RECEIVED IN MAIN MODE

DESCRIPTION

If the tire pressure warning ECU does not receive radio waves from the transmitters after all IDs are registered, DTC C2126/26 is set in the tire pressure warning ECU and the tire pressure warning light blinks for 1 minute and then remains on.

When the tire pressure warning ECU successfully receives radio waves from all the transmitters whose IDs are stored in the ECU, DTC C2126/26 will be deleted and the tire pressure warning light will go off.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area

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C2126/26	After ID registration is completed, ECU does not receive radio waves from transmitters whose IDs are stored in ECU.	• ID registration failure • Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU

HINT:

If the IDs stored in the tire pressure warning ECU differ from the transmitter IDs, DTC C2126/26 will be set. Check that the IDs in the ECU are the same as the transmitter IDs.

WIRING DIAGRAM

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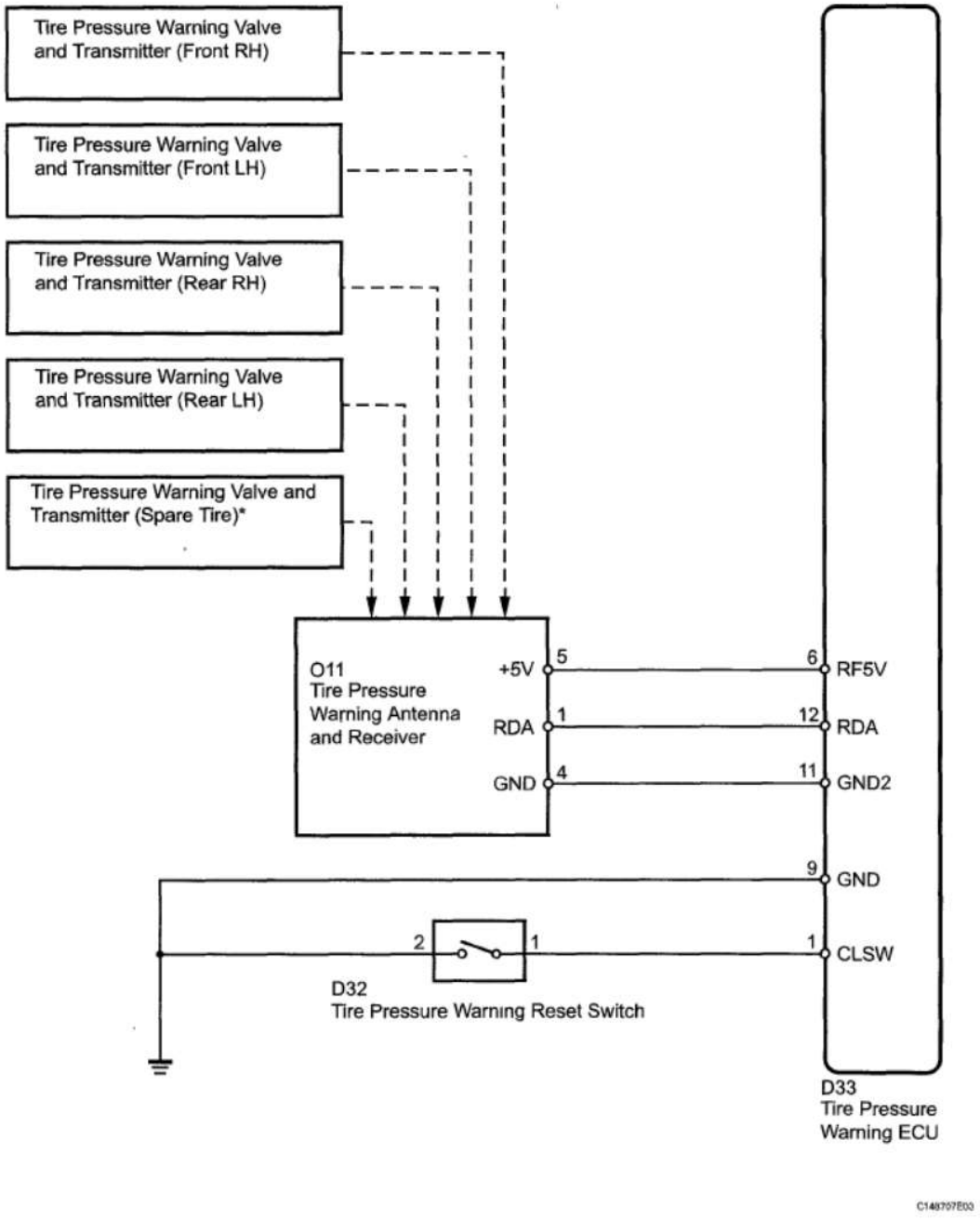


Fig. 28: Tire Pressure Warning Valve - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after**

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registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.

1. **IDENTIFY TRANSMITTER NOT RECEIVED**
   a. Set the tire pressure to the appropriate specified values (See **TIRE PRESSURE WARNING SYSTEM**).
   b. Turn the ignition switch off.
   c. Connect Techstream to the DLC3.
   d. Turn the ignition switch on (IG) and turn the tester on.
   e. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   f. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure 1 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi),	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

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	Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)		
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: (1) It may take about 2 or 3 minutes until the values are displayed.			

g. Rapidly reduce the tire pressure for each wheel by at least 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds.

h. Check the DATA LIST.

NOTE:

- **It takes about 2 or 3 minutes to display the updated tire pressure data.**
- **When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.**
- **Record the "ID Tire Inflation Pressure" data transmitter ID that corresponds to each tire.**

i. After confirming that the "ID Tire Inflation Pressure" data for one tire (ID1 to ID5) has changed, repeat this procedure one by one. Identify the transmitter not received.

Result

RESULT REFERENCE

Condition	Proceed to

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One or more of transmitters abnormal	A
All normal	B

B: END

A: Go to next step

2. **CHECK TRANSMITTER ID**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Registered ID1 Code	Registered ID1 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID1 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID2 Code	Registered ID2 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID2 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID3 Code	Registered ID3 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID3 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID4 Code	Registered ID4 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID4 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID5 Code	Registered ID5 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID5 is displayed	*: Displayed only when the ID No. is not registered.

   f. Check the ID number on the identified transmitter by removing it from the tire and wheel.

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Tire Pressure Warning Valve and Transmitter:

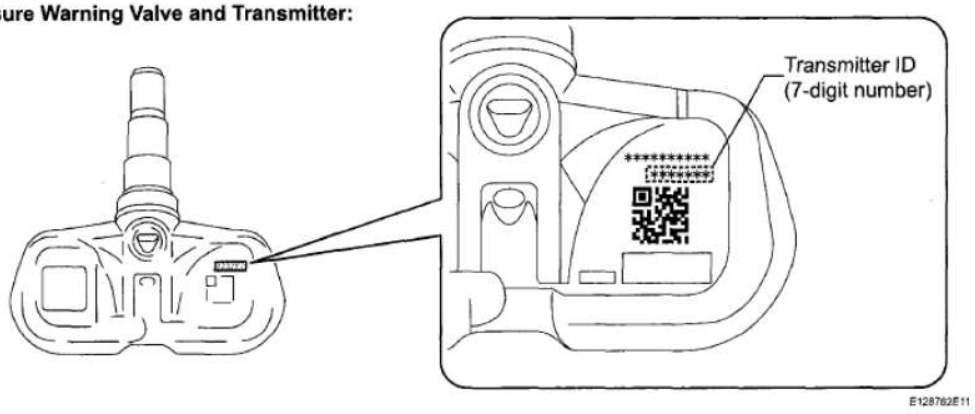


Fig. 29: Identifying 7-Digit Number Transmitter ID
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

g. Confirm that the ID number on the transmitter and recorded transmitter ID match.

Result

RESULT REFERENCE

Result	Proceed to
Match	A
Do not match	B

B: Go to step 4

A: Go to next step

3. **REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER**
   a. Replace the tire pressure warning valve and transmitter (See **REMOVAL**).
4. **REGISTRATION OF TRANSMITTER ID**
   a. Perform registration (See **REGISTRATION**).
5. **PERFORM INITIALIZATION**
   a. Perform initialization (See **INITIALIZATION**).
6. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

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TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1.0kgf/cm^2 ,-14psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,	Actual tire	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0

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Inflation Pressure	-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	inflation pressure	kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: • (1) It may take about 2 or 3 minutes until the values are displayed. • When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.			

Result

RESULT REFERENCE

Result	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B: END

A: Go to next step

7. **REPLACE TIRE PRESSURE WARNING ANTENNA AND RECEIVER**
   a. Replace the tire pressure warning antenna and receiver (See **TIRE PRESSURE WARNING RECEIVER (W/ ANTENNA)**).
8. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,	Actual tire	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0

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Inflation Pressure	-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	inflation pressure	kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537f5 kPa (5,4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

HINT:

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- (1) It may take about 2 or 3 minutes until the values are displayed.
- When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.

Result

RESULT REFERENCE

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

A: END

DTC C2141/41 TRANSMITTER ID1 ERROR; DTC C2142/42 TRANSMITTER ID2 ERROR; DTC C2143/43 TRANSMITTER ID3 ERROR; DTC C2144/44 TRANSMITTER ID4 ERROR; DTC C2145/45 TRANSMITTER ID5 ERROR

DESCRIPTION

The tire pressure warning valve and transmitters that are installed in the tire and wheel assemblies measure the tire pressure. The measured values are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU. The ECU compares the measured air pressure values with the air pressure threshold. When the measured air pressure value is less than this threshold, the warning light in the combination meter turns on.

When the internal circuit of a tire pressure warning valve and transmitter is malfunctioning, one of these DTCs will be output.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2141/41 C2142/42 C2143/43 C2144/44 C2145/45	If an "ERROR" signal is received 3 times consecutively, the tire pressure warning valve and transmitter will be judged as defective and a DTC will be output. This will happen in situations where the inflation pressure is outside the range -100 to 637.5 kPa (-1 to 6.5 kgf/cm^2 , -14 to 92 psi), the temperature inside the tire is outside the specified range -40 to 120°C (-40 to 248°F), or an error occurs in the tire pressure warning valve and transmitter or the surrounding area.	• Tire pressure warning valve and transmitter • Tire pressure warning ECU

HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is

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malfunctioning because it cannot be identified by the output DTC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.**

1. **IDENTIFY TRANSMITTER CORRESPONDING TO DTC**
   a. Set the tire pressure to the specified value (See **TIRE PRESSURE WARNING SYSTEM**).
   b. Turn the ignition switch off.
   c. Connect Techstream to the DLC3.
   d. Turn the ignition switch on (IG) and turn the tester on.
   e. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   f. Display the "ID Tire Inflation Pressure" data for each wheel using the tester.
   g. Rapidly reduce the tire pressure for each wheel by at least 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds. If the "ID Tire Inflation Pressure" data displayed on the tester (ID1 to ID5) does not change, the tire pressure warning valve and transmitter corresponding to the unchanged "ID Tire Inflation Pressure" data was the cause of the output DTC.

      HINT:

      - Identify the malfunctioning tire pressure warning valve and transmitter by repeatedly decreasing the tire pressure for each tire.
      - Record which "ID Tire Inflation Pressure" data (ID1 to ID5) corresponds to which tire.

      Tire Pressure Monitor

      TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

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	(5.4 kgf/cm^2 , 78 psi)		
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: (1) It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2125/25 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**).			

h. Check the DATA LIST.

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Result

RESULT REFERENCE

Condition	Detection Condition
One of "Tire Inflation Pressure" data (ID1 to ID5) changed.	Normal
"Tire Inflation Pressure" data did not change.	Transmitter corresponding to DTC

NOTE:

- **When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.**
- **Record the transmitter IDs and positions of transmitters that are normal.**

i. When the "ID Tire Inflation Pressure" data (ID1 to ID5) has changed, repeat this procedure to identify the tire pressure warning valve and transmitter that corresponds to the DTC.

j. When all of the "ID Tire Inflation Pressure" data (ID1 to ID5) has changed, identify the malfunctioning tire pressure warning valve and transmitter using the recorded ID numbers and output DTCs.

k. Set the tire pressures to the appropriate specified values (See **TIRE PRESSURE WARNING SYSTEM**).

2. **REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER**

   a. Replace the identified tire pressure warning valve and transmitter with a new one (See **REMOVAL**).

HINT:

- Before installing a new tire pressure warning valve and transmitter, read and write down its transmitter ID.
- The IDs for the tire pressure warning valve and transmitters that are not replaced should be checked using the tester and recorded.

3. **REGISTRATION OF TRANSMITTER ID**

   a. Register the transmitter IDs for all wheels (See **REGISTRATION**).

4. **PERFORM INITIALIZATION**

   a. Perform initialization (See **INITIALIZATION**).

5. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**

   a. Turn the ignition switch off.

   b. Connect Techstream to the DLC3.

   c. Turn the ignition switch on (IG) and turn the tester on.

   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.

   e. Check the values by referring to the table below.

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Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0		

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ID5 Tire Inflation Pressure	kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: • (1) It may take about 2 or 3 minutes until the values are displayed. • When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.			

Result

RESULT REFERENCE

Result	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B: END

A: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

DTC C2165/65 ABNORMAL TEMPERATURE INSIDE ID1 TIRE; DTC C2166/66 ABNORMAL TEMPERATURE INSIDE ID2 TIRE; DTC C2167/67 ABNORMAL TEMPERATURE INSIDE ID3 TIRE; DTC C2168/68 ABNORMAL TEMPERATURE INSIDE ID4 TIRE; DTC C2169/69 ABNORMAL TEMPERATURE INSIDE ID5 TIRE

DESCRIPTION

Each tire pressure warning valve and transmitter measures the internal temperature of its tire as well as tire pressure, and transmits the information to the tire pressure warning ECU along with the transmitter ID. If the measured temperature is out of the specified range, the tire pressure warning ECU recognizes it as a malfunction, outputs DTCs, and the tire pressure warning light blinks for 1 minute and then remains on.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2165/65 C2166/66X C2167/67 C2168/68 C2169/69	Temperature inside the tire exceeds 119°C (246°F) more than the specified times.	• Tires • Tire pressure warning valve and transmitter • Tire pressure warning ECU

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HINT:

It is necessary to perform the procedure to identify the tire pressure warning valve and transmitter that is malfunctioning because it cannot be identified by the output DTC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and note them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU and/or any of the valve and transmitters have been replaced.**

1. **CHECK TIRES**
   a. Check that the tires are not flat, and have no indication of air pressure drop.

   OK:

   Tires are normal.

   HINT:

   If a tire is damaged, the tire pressure warning valve and transmitter may also have been damaged at the same time.

   NG: REPLACE TIRE AND TIRE PRESSURE WARNING VALVE AND TRANSMITTER (See **REMOVAL**)

   OK: Go to next step

2. **IDENTIFY TRANSMITTER CORRESPONDING TO DTC**
   a. Set the tire pressure to the specified value (See **TIRE PRESSURE WARNING SYSTEM**).
   b. Turn the ignition switch off.
   c. Connect Techstream to the DLC3.
   d. Turn the ignition switch on (IG) and turn the tester on.
   e. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   f. Display the "ID Tire Inflation Pressure" data for each wheel using the tester.
   g. Rapidly reduce the tire pressure for each wheel by at least 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds.
   h. Check the DATA LIST.

      Tire Pressure Monitor

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TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0	Actual tire	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100

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Inflation Pressure	kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	inflation pressure	kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

HINT:

(1) It may take about 2 or 3 minutes until the values are displayed. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2125/25 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**).

Result

RESULT REFERENCE

Condition	Detection Condition
One of "ID Tire Inflation Pressure" data (ID1 to ID5) changed.	Normal
No "ID Tire Inflation Pressure" data changed.	Transmitter corresponding to DTC

NOTE:

- **It takes about 2 or 3 minutes to display the updated tire pressure data.**
- **When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.**
- **Record the transmitter ID and position of transmitters that are normal.**

i. When the "ID Tire Inflation Pressure" data (ID1 to ID5) has changed, repeat this procedure to identify the tire pressure warning valve and transmitter that corresponds to the DTC.

j. When all of the "ID Tire Inflation Pressure" data (ID1 to ID5) has changed, identify the malfunctioning tire pressure warning valve and transmitter based on the recorded ID numbers and output DTC.

3. **REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER**

a. Replace the identified tire pressure warning valve and transmitter with a new one (See **REMOVAL**).

HINT:

- Before installing a new tire pressure warning valve and transmitter, read and write down its transmitter ID.
- The IDs for the tire pressure warning valve and transmitters that are not replaced should be checked using the tester and recorded.

4. **CHECK REGISTRATION OF TRANSMITTER ID**

a. Register the transmitter IDs for all wheels (See **REGISTRATION**).

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5. **PERFORM INITIALIZATION**
   a. Perform initialization (See **INITIALIZATION**).
6. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
	ID4 tire inflation pressure /		

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ID4 Tire Inflation Pressure	min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: • (1) It may take about 2 or 3 minutes until the values are displayed. • When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.			

Result

RESULT REFERENCE

Condition	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B: END

A: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

DTC C2171/71 TRANSMITTER ID NOT REGISTERED

DESCRIPTION

The IDs of each tire pressure warning valve and transmitter are registered in the tire pressure warning ECU.

When the ECU detects that any transmitter ID code is not registered in the ECU, the DTC will be output.

DTC DETECTION CONDITION AND TROUBLE AREA

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DTC No.	DTC Detection Condition	Trouble Area
C2171/71	Transmitter ID code is not registered. (When an ID code is unregistered for 3 minutes or more)	Tire pressure warning ECU

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **CONFIRM REGISTRATION CONDITION (REGISTERED ID CODES)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Registered ID1 Code	Registered ID1 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID1 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID2 Code	Registered ID2 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID2 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID3 Code	Registered ID3 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID3 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID4 Code	Registered ID4 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID4 is displayed	*: Displayed only when the ID No. is not registered.
Registered ID5 Code	Registered ID5 code/ min.: 0 max.: FFFFFFF*	The ID No. registered in the transmitter ID5 is displayed	*: Displayed only when the ID No. is not registered.

OK:

The registered transmitter ID codes are displayed on the tester screen.

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NG: Go to step 2

OK: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

2. **PERFORM REGISTRATION (TRANSMITTER ID)**
   a. Register the transmitter IDs for all the wheels (See **REGISTRATION**).
3. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi),	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

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	Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)		
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire Inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
HINT: • (1) It may take about 2 or 3 minutes until the values are displayed. • When no "ID Tire Inflation Pressure" data has changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.			

Result

RESULT REFERENCE

Result	Proceed to
All tire pressure readings are equal to specified values.	A
Tire pressure values are not displayed.	B

B: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

A: END

DTC C2173/73 VEHICLE SPEED OR ENGINE SPEED SIGNAL MALFUNCTION

DESCRIPTION

The tire pressure warning ECU receives a vehicle speed signal from the combination meter and an engine speed signal from the ECM. The tire pressure warning ECU uses these signals to detect DTCs C2121/21 to C2125/25

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(No Signal from Transmitter) and DTC C2177/77 (Initialization not Completed).

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2173/73	Following condition (a) or (b) is met for a total of 15 minutes: a. No engine speed signal while vehicle speed is 8 km/h (5 mph) or more b. No vehicle speed signal while engine speed is a specified value	• Combination meter • ECM • Harness or connector • Tire pressure warning ECU

HINT:

This DTC is set at the same time as DTCs C2121/21 to C2125/25 are being set.

WIRING DIAGRAM

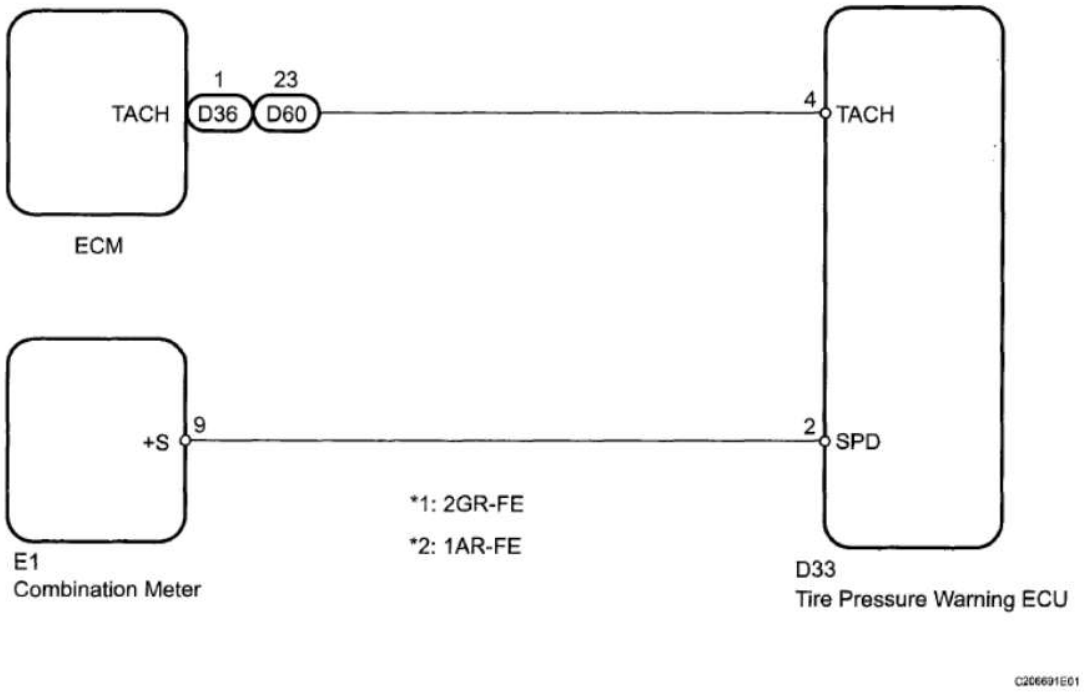


Fig. 30: Engine Speed Signal Malfunction - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after**

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registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.

1. **PERFORM SIGNAL CHECK (VEHICLE SPEED SIGNAL AND ENGINE SPEED SIGNAL)**
   a. Enter the signal check mode in TEST MODE PROCEDURE (See **TEST MODE PROCEDURE**).
   b. Drive the vehicle at 20 km/h (12 mph) or more for 3 seconds or more to erase DTC C2191/91.
   c. Start the engine and allow it to run at 1000 rpm for 3 seconds or more to erase DTC C2194/94.
   d. Check for test mode DTCs.

Result

RESULT REFERENCE

Result	Proceed to
DTCs C2191/91 and C2194/94 are erased	A
DTC C2191/91 is output	B
DTC C2194/94 is output	C

HINT:

DTCs C2181/81 to C2185/85 (Transmitter ID not Received) are output at this time, but they are not related to this check.

B: GO TO DTC C2191/91 (See **DTC C2191/91 VEHICLE SPEED SIGNAL ERROR (TEST MODE DTC)**)

C: GO TO DTC C2194/94 (See **DTC C2194/94 ENGINE SPEED SIGNAL ERROR (TEST MODE DTC)**)

A: USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

DTC C2176/76 RECEIVER ERROR

DESCRIPTION

The signals are transmitted to the tire pressure warning antenna and receiver on the body as radio waves and then sent to the tire pressure warning ECU.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2176/76	Any of the following is detected: • Malfunction in the tire pressure warning ECU internal circuit. • Terminal RF5V is shorted to ground.	• Tire pressure warning antenna and receiver • Harness or connector

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	• Malfunction in the tire pressure warning antenna and receiver internal circuit.	• Tire pressure warning ECU

WIRING DIAGRAM

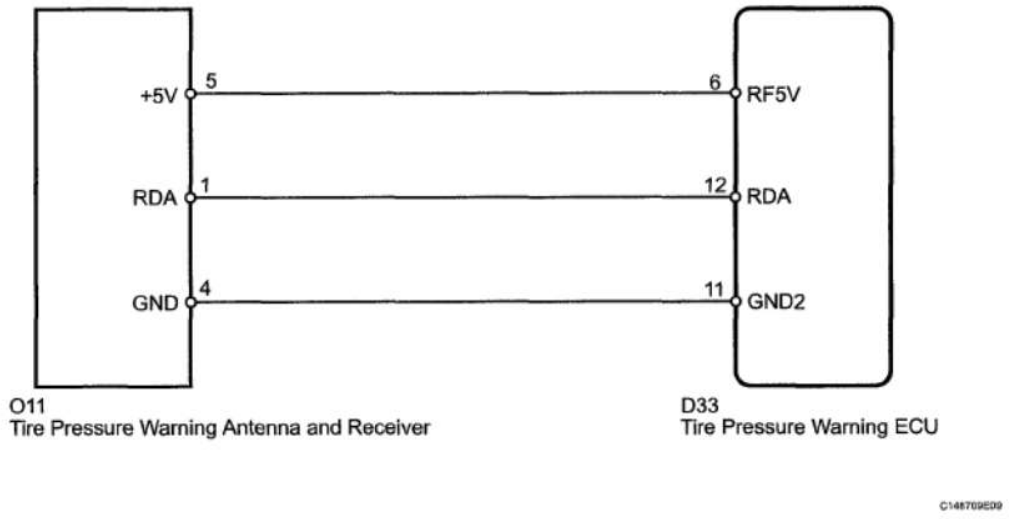


Fig. 31: Tire Pressure Warning Antenna And Receiver - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **CHECK HARNESS AND CONNECTOR (ECU - RECEIVER)**
   a. Disconnect the D33 ECU connector.
   b. Disconnect the 011 receiver connector.
   c. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-6 (RF5V) - O11-5 (+5V)	Always	Below 1 ohms
D33-12 (RDA) - O11-1 (RDA)		
D33-11 (GND2) - O11-4 (GND)		
D33-6 (RF5V) or O11-5 (+5V) - Body ground		

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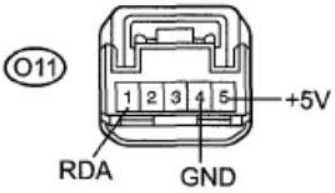
D33-11 (GND2) or O11-4 (GND) - Body ground D33-12 (RDA) or O11-1 (RDA) - Body ground		10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Tire Pressure Warning ECU)



Front view of wire harness connector:
(to Tire Pressure Warning Antenna and Receiver)



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Fig. 32: Identifying D33 ECU And 011 Receiver Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **CHECK TIRE PRESSURE WARNING ECU**
   a. Reconnect the D33 ECU connector.
   b. Turn the ignition switch on (IG).
   c. Measure the voltage according to the value (s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
D33-6 (RF5V) - D33-11 (GND2)	Ignition switch on (IG)	4.5 to 5.5 V

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NG: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

Component with harness connected:
(Tire Pressure Warning ECU)

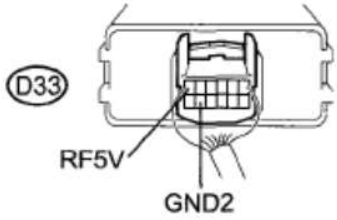


Fig. 33: Identifying D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE TIRE PRESSURE WARNING ANTENNA AND RECEIVER (See **TIRE PRESSURE WARNING RECEIVER (W/ ANTENNA)**)

DTC C2177/77 INITIALIZATION NOT COMPLETED

DESCRIPTION

Initialization is necessary after replacing any of the tire pressure warning ECU, tires with different tire pressure, or tire pressure warning valve and transmitters, after rotating the tires or when a new vehicle is delivered.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2177/77	All conditions below are met: • During initialization • Tire pressure warning valve and transmitter is not in stop mode • Signal is not received from tire pressure warning valve and transmitter for 20 minutes or more • Vehicle speed is more than 8 km/h (5 mph) for a total of 20 minutes	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Tire pressure warning ECU • Harness or connector

WIRING DIAGRAM

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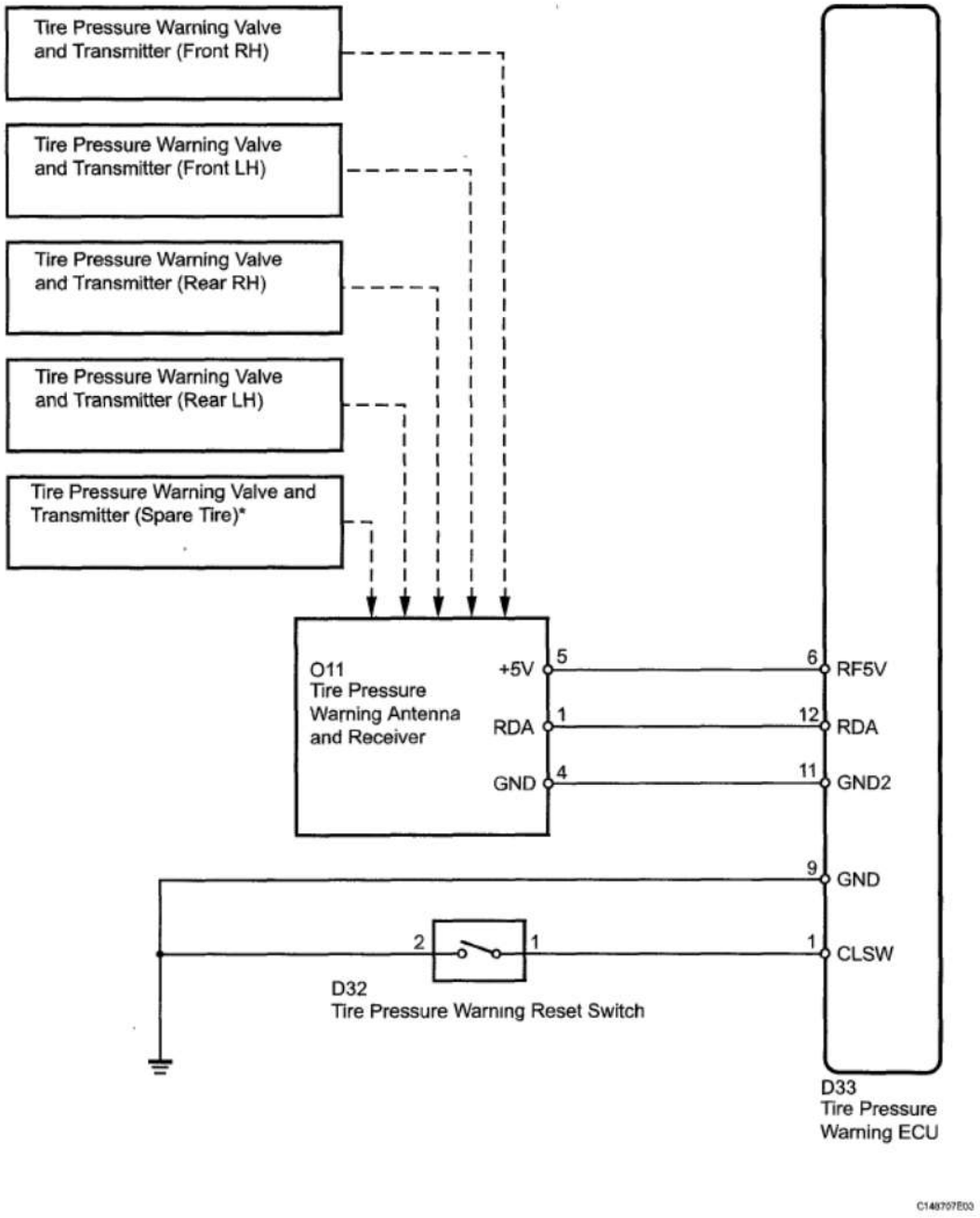


Fig. 34: Tire Pressure Warning Valve - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after**

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registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU and/or valve and transmitters have been replaced.

1. **CHECK FREQUENCY RECEIVING CONDITION**
   a. Check if the vehicle is located in an area such as described below:
      1. Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.

         HINT:

         If the vehicle is located in an area described above, the tire pressure warning light may turn on only in a particular area due to interfering radio frequencies.

      2. Devices using similar radio frequencies are used in the vehicle.

OK:

Facilities, or devices that use similar radio frequencies are not located in the vicinity of the vehicle.

HINT:

Radio transmission may be interrupted due to the surroundings, or devices installed by the user.

NG: CHECK IF ANY DEVICE IS INSTALLED BY USER

OK: Go to next step

2. **PERFORM INITIALIZATION**
   a. Perform initialization (See **INITIALIZATION**).
3. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check the values by referring to the table below.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0		

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ID1 Tire Inflation Pressure	kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5. kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 , -14 psi) max.: Absolute pressure/637.5 kPa (6.5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)
ID5 Tire inflation Pressure	ID5 tire inflation pressure / min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure/-100 kPa (-1.0 kgf/cm^2 ,-14 psi) max.: Absolute pressure/637.5 kPa (6,5 kgf/cm^2 , 92.5 psi), Relative pressure/537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1.0 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.(1)

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HINT:

- (1) It may take about 2 or 3 minutes until the values are displayed.
- When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck the data.

Result

RESULT REFERENCE

Condition	Proceed to
Tire pressure values are not displayed.	A
All tire pressure readings are equal to specified values.	B

B: END

A: GO TO DTC C2121/21 TO C2125/25 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1**)

DTC C2191/91 VEHICLE SPEED SIGNAL ERROR (TEST MODE DTC)

DESCRIPTION

The tire pressure warning ECU receives a vehicle speed signal from the combination meter. This DTC is stored upon entering test mode, and cleared when a vehicle speed signal of 20 km/h (12 mph) is detected for 3 seconds or more. This DTC is output only in test mode.

HINT:

The meter CPU receives vehicle speed signals from this circuit. The vehicle speed sensor detects the voltage that varies according to the vehicle speed. The skid control ECU supplies power to the vehicle speed sensor. The skid control ECU detects vehicle speed signals based on the pulses of the voltage. The skid control ECU transmits vehicle speed signals as pulses to the meter CPU. A voltage of 12 V is output from the combination meter assembly and then input to the skid control ECU. The signal is changed to a pulse signal at the transistor in the combination meter assembly. A voltage of 12 V or 5 V is output from each ECU or relay and then input to the combination meter assembly. Each ECU controls the respective system based on the pulse signal.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2191/91	Vehicle speed signal circuit malfunction	• Combination meter • Vehicle speed sensor • Harness or connector • Tire pressure warning ECU

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WIRING DIAGRAM

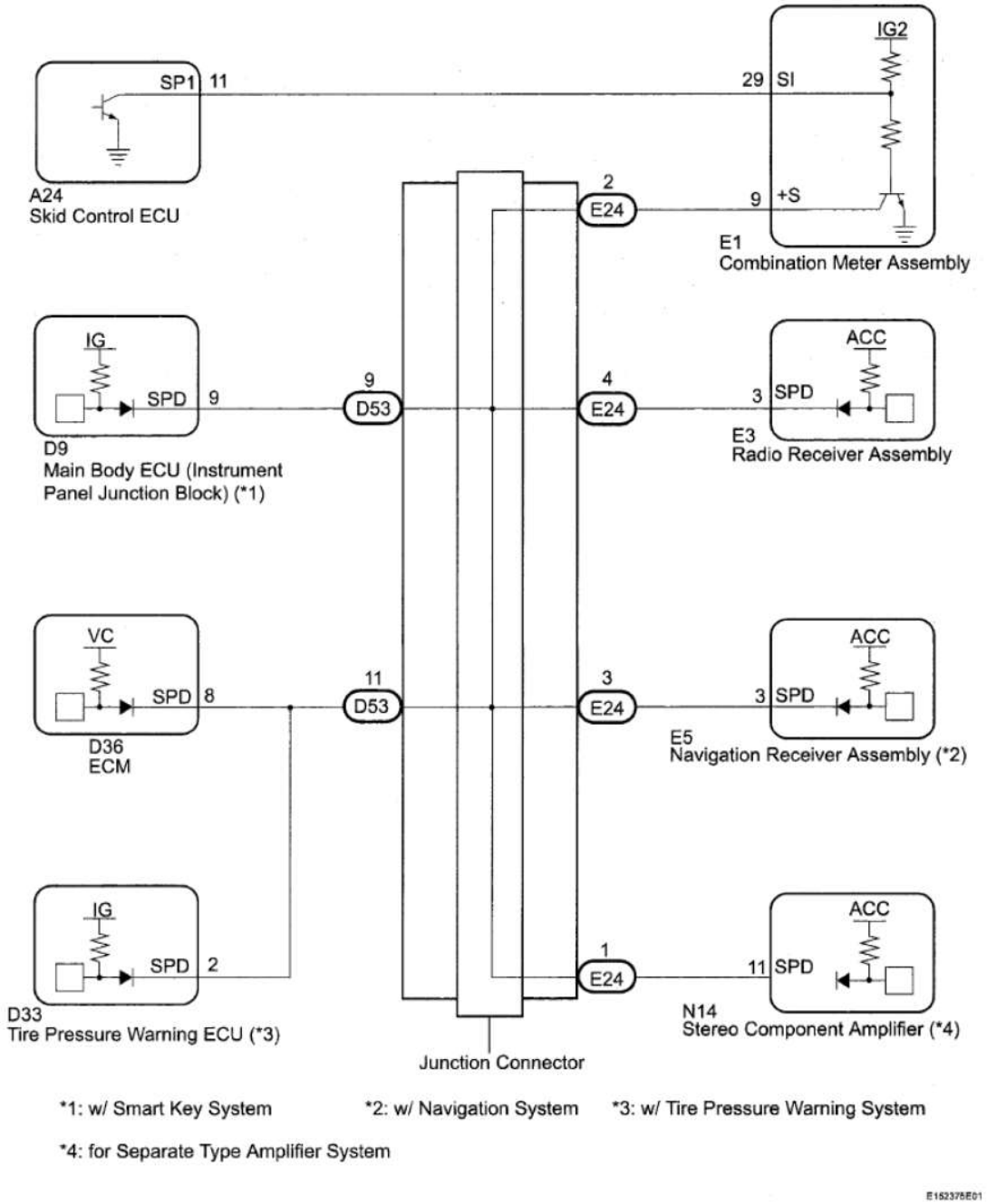


Fig. 35: Vehicle Speed Signal - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before**

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removal.

- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **READ VALUE USING TECHSTREAM (VEHICLE SPEED)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
   e. Check that the values indicated on the tester and on the combination meter are the same.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Vehicle Speed	Vehicle speed/ min.: 0km/h (0mph) max.: 255 km/h (158 mph)	Almost same as actual vehicle speed	Speed indicated on combination meter

OK:

Vehicle speed indicated on the tester and on the combination meter are the same.

NG: Go to step 2

OK: USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

2. **CHECK HARNESS AND CONNECTOR (ECU - COMBINATION METER)**
   a. Disconnect the D33 ECU connector.
   b. Disconnect the E1 meter connector.
   c. Measure the resistance according to the value (s) in the table below.

Standard resistance

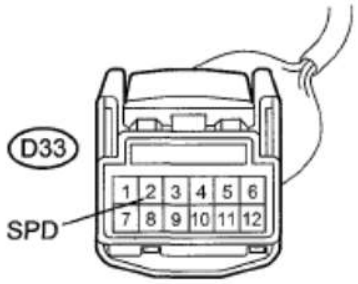
STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-2 (SPD) - E1-9 (+S)	Always	Below 1 ohms
D33-2 (SPD) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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Front view of wire harness connector:
(to Tire Pressure Warning ECU)



Front view of wire harness connector:
(to Combination Meter)

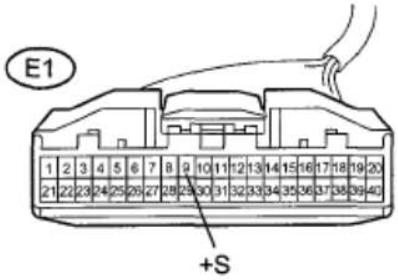


Fig. 36: Identifying D33 ECU And E1 Meter Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

3. **INSPECT TIRE PRESSURE WARNING ECU (SPD SIGNAL)**
   a. Remove the combination meter (See **REMOVAL**).
   b. Reconnect D33 and E1 connectors.
   c. Jack up the vehicle.
   d. Shift the lever to the neutral position.
   e. Turn the ignition switch on (IG).
   f. Check the waveform of the ECU connector using an oscilloscope while turning the wheel slowly.

Result

RESULT REFERENCE

Tester Connection	Switch Condition	Specified Condition
E1-9 (+S) - Body ground	Ignition switch on (IG)	Correct waveform appears as shown

Tool Setting

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TOOL SETTING REFERENCE

Item	Contents
Tool Setting	5 V/DIV., 20 ms/DIV.
Vehicle Condition	Driving wheel rotating slowly

OK:

The waveform is displayed as shown in the illustration.

HINT:

When the system is functioning normally, one wheel revolution generates 4 pulses. As the vehicle speed increases, the width indicated by (A) in the illustration narrows.

Component with harness connected:
(Combination Meter Assembly)

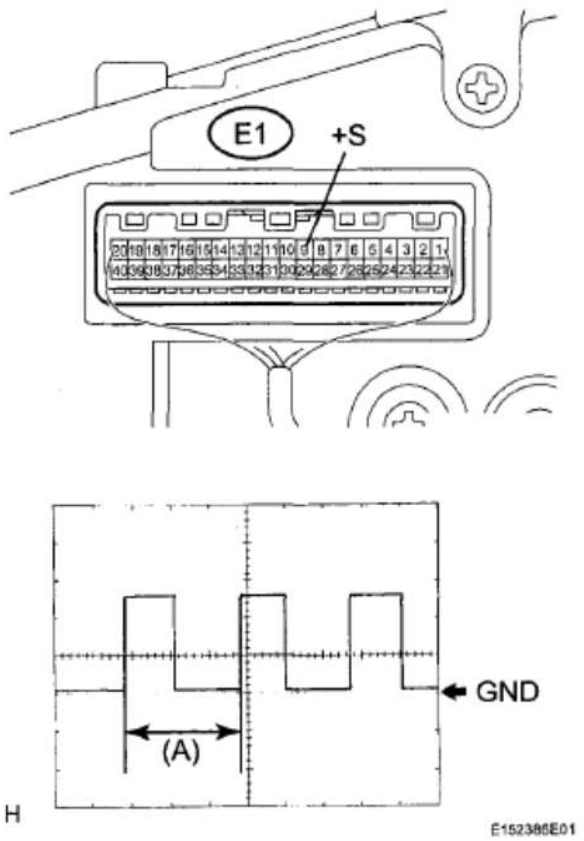


Fig. 37: Identifying E1 Combination Meter Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NG: GO TO METER/GAUGE SYSTEM (See **SPEED SIGNAL CIRCUIT**)

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OK: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

DTC C2194/94 ENGINE SPEED SIGNAL ERROR (TEST MODE DTC)

DESCRIPTION

The tire pressure warning ECU receives an engine speed signal from the ECM. This DTC is stored upon entering test mode, and cleared when an engine speed signal of 1000 rpm is detected for 3 seconds or more. This DTC is output only in test mode.

DTC DETECTION CONDITION AND TROUBLE AREA

DTC No.	DTC Detection Condition	Trouble Area
C2194/94	Engine speed signal circuit malfunction	• ECM • Harness or connector • Tire pressure warning ECU

WIRING DIAGRAM

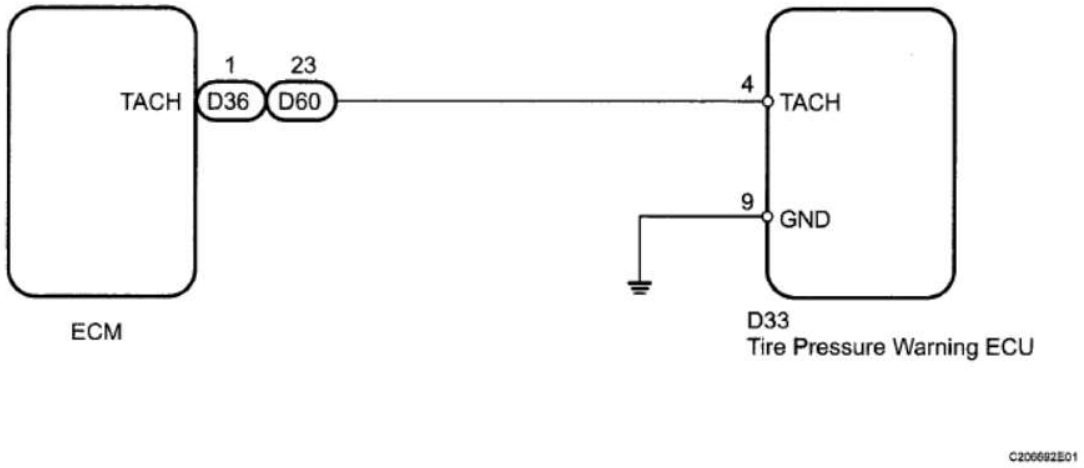


Fig. 38: Engine Speed Signal - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **READ VALUE USING TECHSTREAM (ENGINE SPEED)**

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a. Turn the ignition switch off.
b. Connect Techstream to the DLC3.
c. Turn the ignition switch on (IG) and turn the tester on.
d. Enter the following menus: Chassis/Tire Pressure Monitor/Data List.
e. Check that the values indicated on the tester and on the combination meter are the same.

Tire Pressure Monitor

TESTER DISPLAY REFERENCE

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Engine Speed	Engine speed/ min.: 0 rpm max.: 65535 rpm	Almost same as actual engine speed	Speed indicated on combination meter

OK:

Engine speed indicated on the tester and on the combination meter are the same.

NG: Go to step 2

OK: USE SIMULATION METHOD TO CHECK (See **HOW TO PROCEED WITH TROUBLESHOOTING**)

2. **INSPECT TIRE PRESSURE WARNING ECU (TACH SIGNAL)**
   a. Disconnect the D33 ECU connector.
   b. Start the engine.
   c. Check the waveform of the ECU connector using an oscilloscope while idling the engine.

OK

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
D33-4 (TACH) - D33-9 (GND)	Idling	Correct waveform appears as shown

Tool Setting

TOOL SETTING REFERENCE

Item	Contents
Tool Setting	5V/DIV., 10ms/DIV.

HINT:

The wavelength becomes shorter as the engine speed increases.

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NG: Go to step 3

Front view of wire harness connector:
(to Tire Pressure Warning ECU)

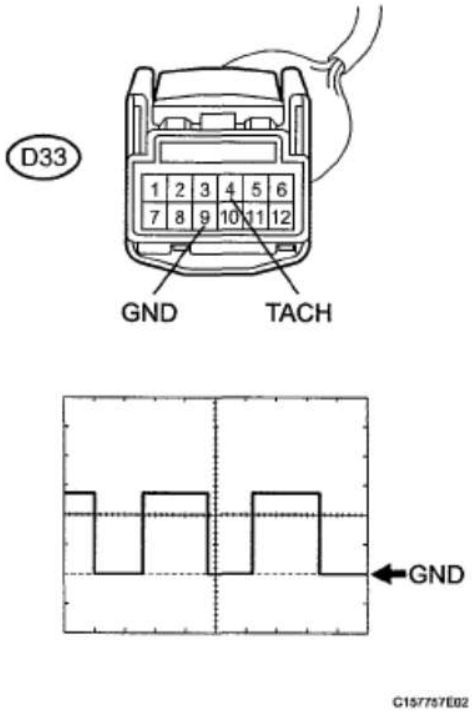


Fig. 39: Identifying D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

3. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - ECM)**
   a. Disconnect the D33 ECU connector.
   b. Disconnect the ECM connector.
   c. Measure the resistance according to the value (s) in the table below.

Standard resistance

2GR-FE

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-4 (TACH) - D36-1 (TACH)	Always	Below 1 ohms
D33-4 (TACH) - Body ground	Always	10 kohms or higher

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1AR-FE

TESTER CONNECTION SPECIFIED CONDITION

Tester Connection	Condition	Specified Condition
D33-4 (TACH) - D60-23 (TACH)	Always	Below 1 ohms
D33-4 (TACH) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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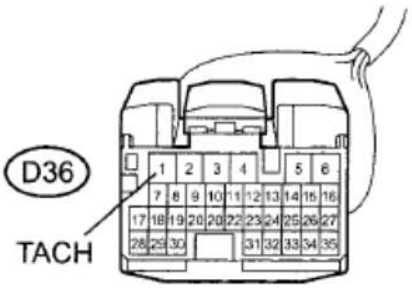
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Front view of wire harness connector:
(to Tire Pressure Warning ECU)



Front view of wire harness connector:
(to ECM for 2GR-FE)



Rear view of wire harness connector:
(to ECM for 1AR-FE)

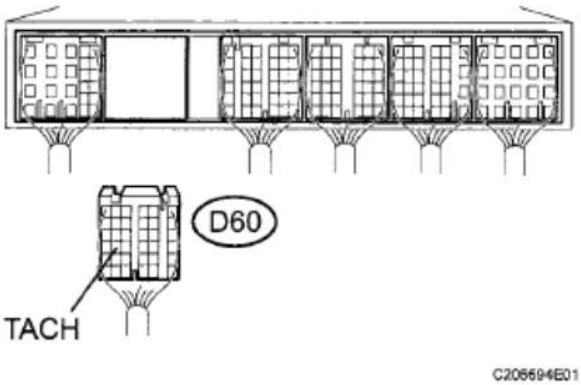


Fig. 40: Identifying D33 ECU And ECM Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE ECM (See **FUEL INJECTOR CIRCUIT**)

TIRE PRESSURE WARNING RESET SWITCH CIRCUIT

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DESCRIPTION

Initialization can be started by pressing the tire pressure warning reset switch and holding it for 3 seconds or more.

If the ECU receives the signal from the switch, the tire pressure warning light blinks 3 times (1 second on, 1 second off).

WIRING DIAGRAM

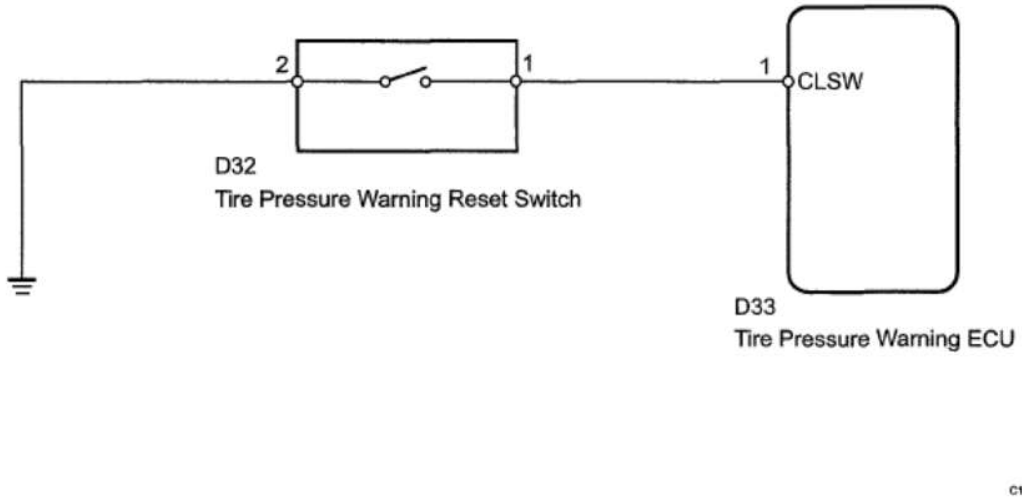


Fig. 41: Tire Pressure Warning Reset Switch Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and note down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **CHECK TIRE PRESSURE WARNING RESET SWITCH FUNCTION**
   a. Perform the tire pressure warning reset switch test in TEST MODE PROCEDURE (See **TEST MODE PROCEDURE**).

OK:

Reset switch ON:

Tire pressure warning light turns on.

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Reset switch OFF:

Tire pressure warning light blinks at 0.125 second.

NG: Go to step 2

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

2. **INSPECT TIRE PRESSURE WARNING RESET SWITCH**
   a. Remove the tire pressure warning reset switch (See **REMOVAL**).
   b. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
D32-1 - D32-2	ON	Below 1 ohms
	OFF	10 kohms or higher

NG: REPLACE TIRE PRESSURE WARNING RESET SWITCH (See **REMOVAL**)

Component without harness connected:
(Tire Pressure Warning Reset Switch)

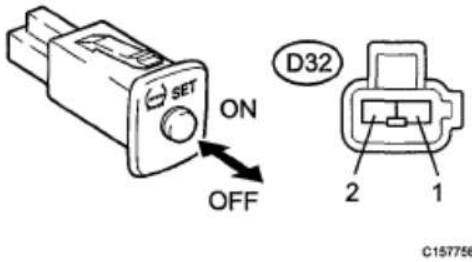


Fig. 42: Inspecting Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (RESET SWITCH - ECU AND BODY GROUND)**
   a. Disconnect the D32 reset switch connector.
   b. Disconnect the D33 ECU connector.
   c. Measure the resistance according to the value (s) in the table below.

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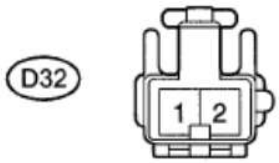
Standard resistance

STANDARD RESISTANCE SPECIFICATION

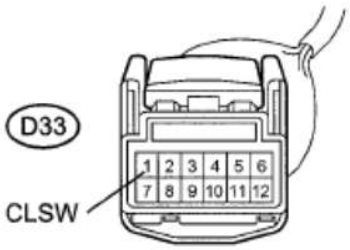
Tester Connection	Condition	Specified Condition
D33-1 (CLSW) - D32-1	Always	Below 1 ohms
D33-1 (CLSW) - Body ground	Always	10 kohms or higher
D32-2 - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Tire Pressure Warning Reset Switch)



Front view of wire harness connector:
(to Tire Pressure Warning ECU)



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Fig. 43: Identifying D32 Reset Switch And D33 ECU Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

TIRE PRESSURE WARNING LIGHT CIRCUIT

DESCRIPTION

If the ECU detects any trouble, the tire pressure warning light blinks (stays on after blinking for 1 minute) and tire pressure monitor is cancelled at the same time. At this time, the ECU records a DTC in the memory.

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Connecting terminals TC and CG of the DLC3 makes the tire pressure warning light blink to output DTCs.

WIRING DIAGRAM

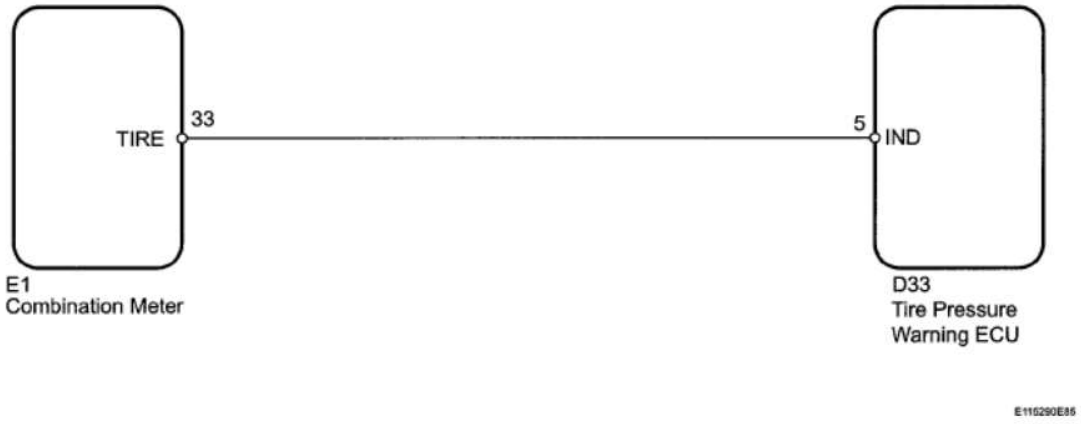


Fig. 44: Tire Pressure Warning Light Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **PERFORM ACTIVE TEST USING TECHSTREAM (COMBINATION METER)**
   a. Turn the ignition switch off.
   b. Connect Techstream to the DLC3.
   c. Turn the ignition switch on (IG) and turn the tester on.
   d. Enter the following menus: Body/Combination Meter/Active Test.
   e. Check the condition of the tire pressure warning light by operating the tester.

Combination Meter

TESTER DISPLAY REFERENCE

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire Pressure Warning System	Tire Pressure Warning Light	Tire pressure warning light is OFF/ON	Confirm that the vehicle is stopped, engine idling

OK:

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The warning light turns on or off according to tester operation.

NG: REPLACE COMBINATION METER (See **REMOVAL**)

OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (COMBINATION METER - ECU AND BODY GROUND)**
   a. Disconnect the D33 ECU connector.
   b. Disconnect the E1 meter connector.
   c. Measure the resistance according to the value (s) in the table below.

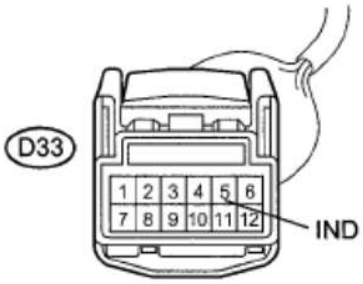
Standard resistance

STANDARD RESISTANCE SPECIFICATION

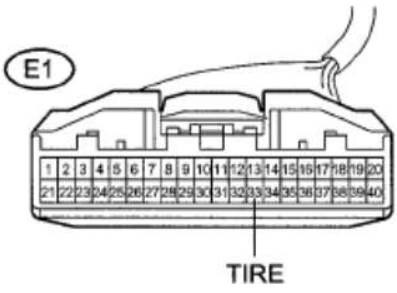
Tester Connection	Condition	Specified Condition
D33-5 (IND) - E1-33 (TIRE)	Always	Below 1 ohms
D33-5 (IND) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Tire Pressure Warning ECU)



Front view of wire harness connector:
(to Combination Meter)



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Fig. 45: Identifying D33 ECU And E1 Meter Connectors
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

ECU POWER SOURCE CIRCUIT

DESCRIPTION

This is the power source for the tire pressure warning ECU.

WIRING DIAGRAM

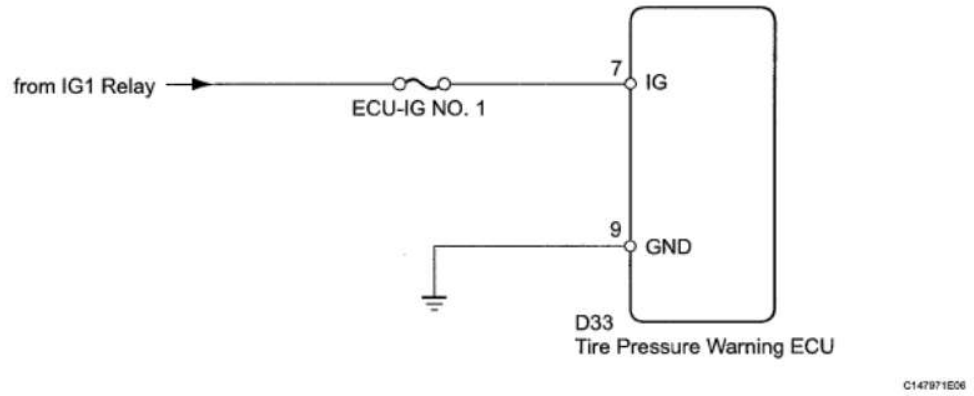


Fig. 46: ECU Power Source Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See REGISTRATION) after registration (See INITIALIZATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **INSPECT FUSE (ECU-IG NO. 1)**
   a. Remove the ECU-IG NO. 1 fuse from the instrument panel junction block.
   b. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition

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ECU-IG NO. 1	Always	Below 1 ohms

NG: Go to step 4

OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (ECU - BATTERY)**
   a. Disconnect the D33 ECU connector.
   b. Measure the voltage according to the value (s) in the table below.

Standard voltage

STANDARD VOLTAGE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
D33-7 (IG) - Body ground	Ignition switch on (IG)	11 to 14 V
	Ignition switch off	Below 1 V

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Tire Pressure Warning ECU)

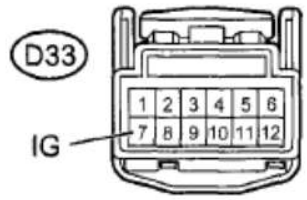


Fig. 47: Identifying Terminal IG Of D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (ECU - BODY GROUND)**
   a. Disconnect the D33 ECU connector.
   b. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-9 (GND) - Body ground	Always	Below 1 ohms

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NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Tire Pressure Warning ECU)

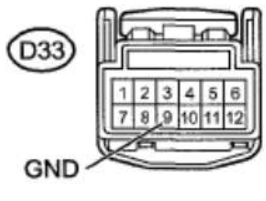


Fig. 48: Identifying Terminal GND Of D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE TIRE PRESSURE WARNING ECU (See **REMOVAL**)

4. **CHECK HARNESS AND CONNECTOR (ECU - FUSE)**
   a. Disconnect the D33 ECU connector.
   b. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-7 (IG) - Body ground	Always	10 kohms or higher

NG: REPLACE FUSE AND REPAIR OR REPLACE HARNESS OR CONNECTOR

Front view of wire harness connector:
(to Tire Pressure Warning ECU)

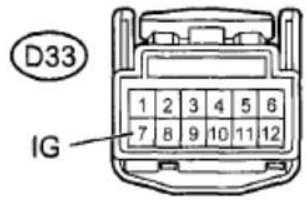


Fig. 49: Identifying Terminal IG Of D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: REPLACE FUSE

TC AND CG TERMINAL CIRCUIT

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DESCRIPTION

Connecting terminals TC and CG of the DLC3 makes the tire pressure warning light blink to output DTCs.

WIRING DIAGRAM

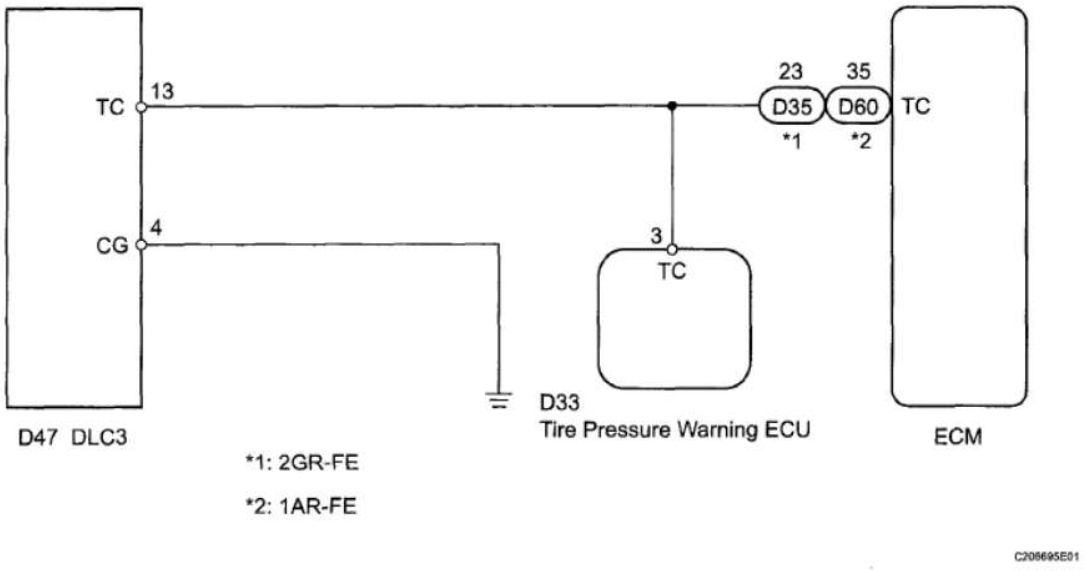


Fig. 50: TC And CG Terminal Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

When various warning lights continue blinking, a ground short in the wiring of terminal TC of the DLC3 or an internal ground short in each ECU is suspected.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using Techstream and write them down before removal.**
- **It is necessary to perform initialization (See INITIALIZATION) after registration (See REGISTRATION) of the transmitter IDs into the tire pressure warning ECU if the ECU has been replaced.**

1. **CHECK HARNESS AND CONNECTOR (ECU - DLC3)**
   a. Disconnect the D33 ECU connector.
   b. Measure the resistance according to the value (s) in the table below.

Standard resistance

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STANDARD RESISTANCE SPECIFICATION

Tester Connection	Condition	Specified Condition
D33-3 (TC) - D47-13 (TC)	Always	Below 1 ohms
D33-3 (TC) - Body ground	Always	10 kohms or higher
D47-4 (CG) - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR OR EACH ECU

DLC3:

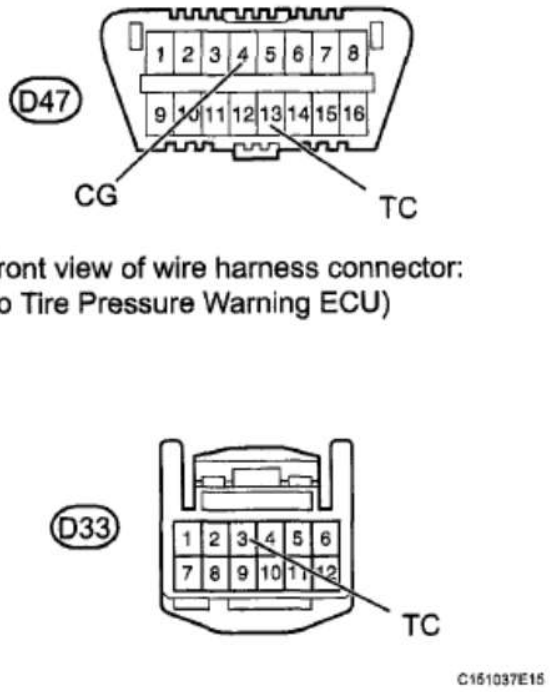


Fig. 51: Identifying D47 DLC3 And D33 Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE (See **PROBLEM SYMPTOMS TABLE**)

TIRE PRESSURE WARNING RECEIVER (W/ ANTENNA)

COMPONENTS

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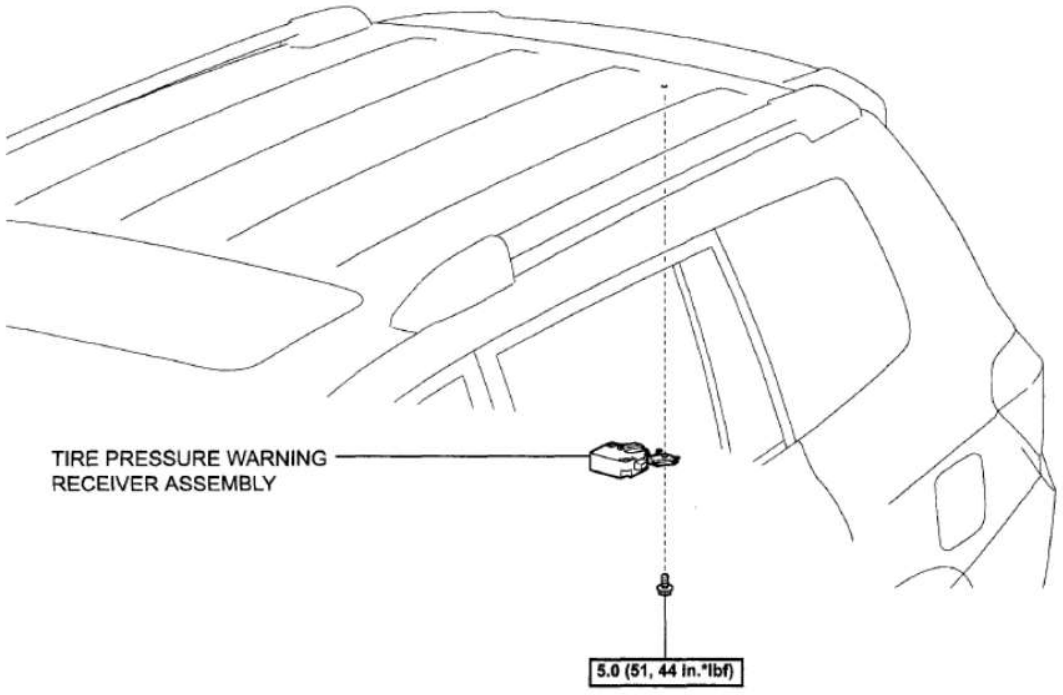


Fig. 52: Identifying Tire Pressure Warning Receiver (W/ Antenna) Components With Torque Specification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

   NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected (See INITIALIZATION).

2. **REMOVE ROOF HEADLINING ASSEMBLY**

   HINT:

   Refer to the instructions for REMOVAL of the roof headlining (See **REMOVAL**).

3. **REMOVE TIRE PRESSURE WARNING RECEIVER ASSEMBLY**
   a. Remove the bolt.

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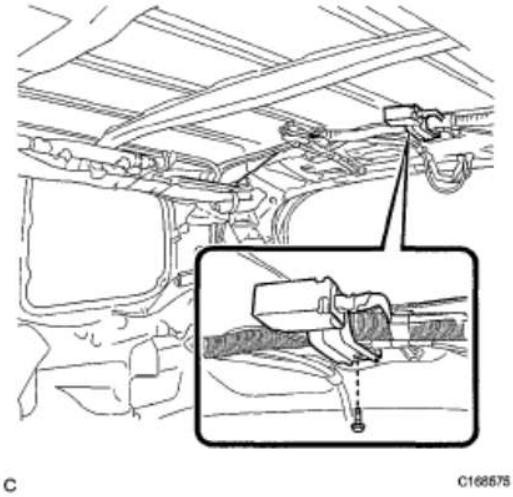


Fig. 53: Identifying Tire Pressure Warning Receiver Assembly Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the connector and remove the tire pressure warning receiver assembly.

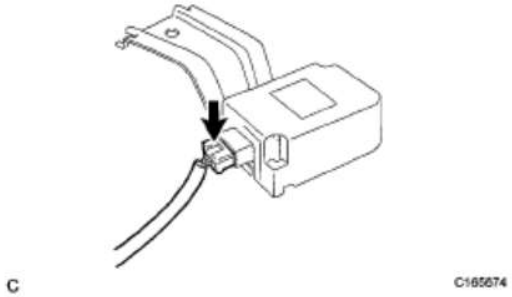
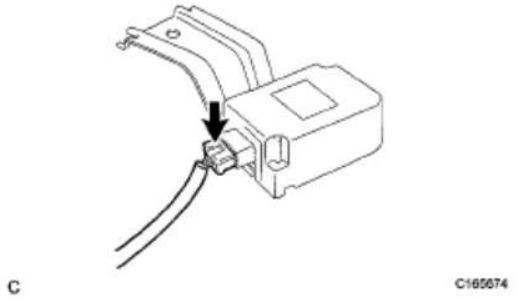


Fig. 54: Locating Tire Pressure Warning Receiver Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING RECEIVER ASSEMBLY**
   a. Connect the connector.



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Fig. 55: Locating Tire Pressure Warning Receiver Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the tire pressure warning receiver assembly with the bolt.

Torque: 5.0 N*m (51 kgf*cm, 44 in.*lbf)

2. **INSTALL ROOF HEADLINING ASSEMBLY**

HINT:

Refer to the instructions for INSTALLATION of the roof headlining (See **INSTALLATION**).

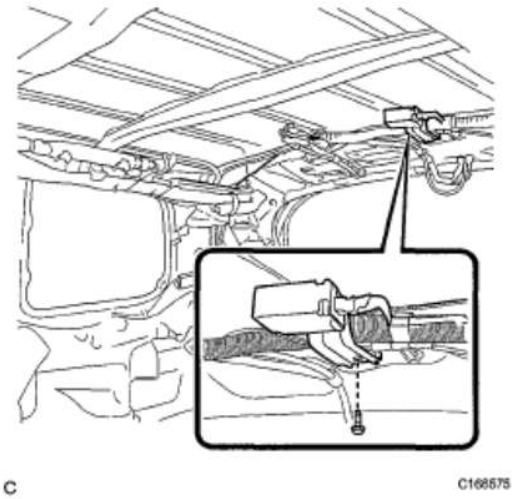


Fig. 56: Identifying Tire Pressure Warning Receiver Assembly With Bolt
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected (See INITIALIZATION).

4. **INSPECT TIRE PRESSURE WARNING SYSTEM**

HINT:

See **TEST MODE PROCEDURE**.

TIRE PRESSURE WARNING VALVE AND TRANSMITTER

COMPONENTS

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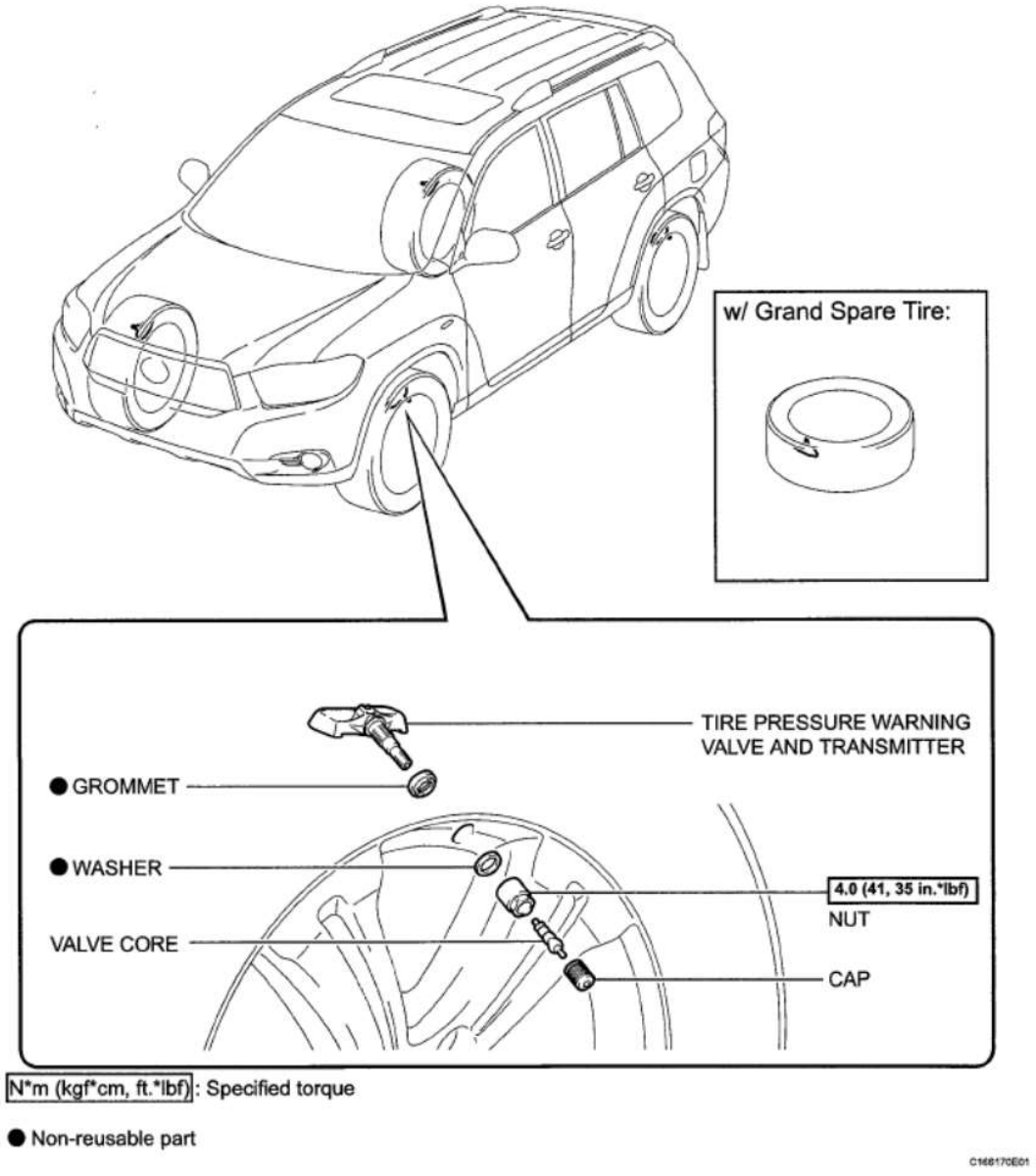


Fig. 57: Identifying Tire Pressure Warning Valve And Transmitter Components With Torque Specification

Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE FRONT WHEEL**
2. **REMOVE REAR WHEEL**
3. **REMOVE GRAND SPARE TIRE (w/ Grand Spare Tire)**
4. **REMOVE TIRE PRESSURE WARNING VALVE AND TRANSMITTER**
   a. Remove the valve core and cap, and release the air from the tire.

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b. After ensuring that a sufficient amount of air has been released, remove the nut and washer that are used to secure the tire pressure warning valve and transmitter. Drop the tire pressure warning valve and transmitter inside the tire.

HINT:

Keep the removed cap, valve core, nut, and washer.

c. After dropping the tire pressure warning valve and transmitter into the tire, disengage the bead using the shoe of the tire remover.

NOTE: Be careful not to damage the tire pressure warning valve and transmitter due to interference between the valve and the tire bead.

d. Remove the bead on the upper side in the usual way.

e. Take out the tire pressure warning valve and transmitter from the tire and remove the bead on the lower side in the usual way.

NOTE: If replacing the tire pressure warning valve and transmitter, make sure that a new grommet and a new washer are used.

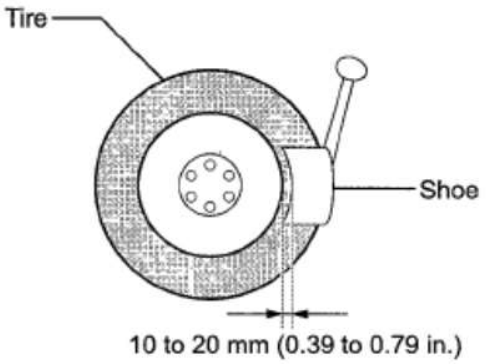


Fig. 58: Dropping Tire Pressure Warning Valve And Transmitter Into Tire
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING VALVE AND TRANSMITTER**

a. Insert the tire pressure warning valve and transmitter into the valve installation hole. Insert it from the inside of the rim so that the printed surface can be seen.

NOTE:

- **Check that there is no visible deformation, damage, or other**

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abnormalities on the tire pressure warning valve and transmitter.

- **Check that there is no foreign matter on the inner grommet and around the rim hole.**
- **If the tire pressure warning valve and transmitter is installed upside down, it may be damaged or fail to transmit signals when running at high speeds.**
- **If installing a new tire pressure warning valve and transmitter, write down the ID number before installation.**
- **It is necessary to register the ID in the ECU after installation (See REGISTRATION).**

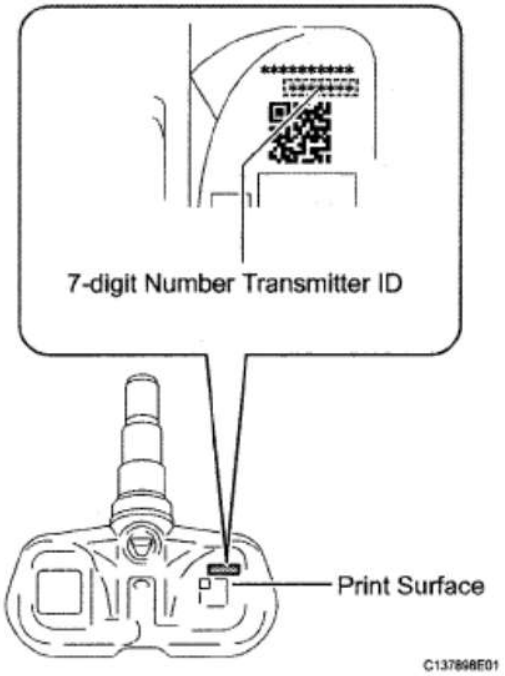


Fig. 59: Identifying Transmitter ID Number
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the washer on the tire pressure warning valve and transmitter from the rim side and tighten the nut.

Torque: 4.0 N*m (41 kgf*cm, 35 in.*lbf)

NOTE:

- **No further tightening is required once the nut is tightened to the specified torque.**
- **Check that there is no foreign matter on the washer and nut.**
- **If replacing the tire pressure warning valve and transmitter, make sure that the new grommet, washer, and nut are used.**

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- **Check that there is no oil, water, or lubricant around the rim hole, tire pressure warning valve and transmitter, washer, and nut. Failing to do so may result in improper installation.**

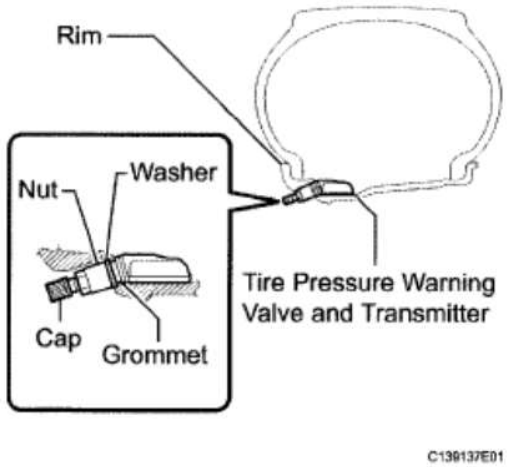


Fig. 60: Identifying Tire Pressure Warning Valve And Transmitter
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Set the wheel disc to the mounting machine and install the lower tire bead. Position the main body of the tire pressure warning valve and transmitter in the shaded area shown in the illustration.

NOTE:

- **If the tire pressure warning valve and transmitter is positioned outside this area, it will be interfered with the tire bead, and may cause damage to the tire pressure warning valve and transmitter.**
- **If the use of lubricant is required when installing the bead, do not apply the lubricant directly to the tire pressure warning valve and transmitter.**

d. Install the upper bead.

NOTE: **Make sure that the tire bead and tool do not interfere with the main body of the tire pressure warning valve and transmitter and that it is not clamped by the bead.**

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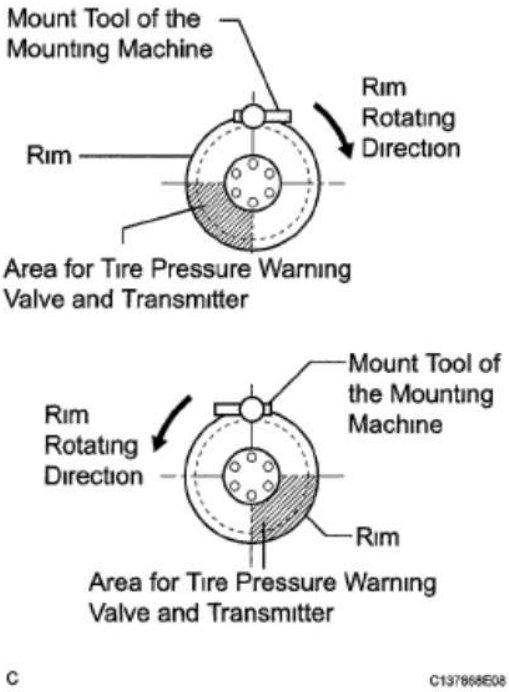


Fig. 61: Setting Wheel Disc To Mounting Machine
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

e. After the tire is inflated, the valve nut may be loose. Retighten the nut to the specified torque and then check for air leaks with soapy water.

Torque: 4.0 N*m (41 kgf*cm, 35 in.*lbf)

NOTE: No further tightening is required once the nut is tightened to the specified torque.

2. **INSTALL FRONT WHEEL**

   Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

3. **INSTALL REAR WHEEL**

   Torque: 103 N*m (1050 kgf*cm, 76 ft.*lbf)

4. **INSTALL GRAND SPARE TIRE (w/ Grand Spare Tire)**
5. **INSPECT TIRES**

   HINT:

   See **INSPECTION**.

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6. **REGISTER TRANSMITTER ID**

   HINT:

   See **REGISTRATION**.

7. **INSPECT TIRE PRESSURE WARNING SYSTEM**

   HINT:

   See **TEST MODE PROCEDURE**.

DISPOSAL

HINT:

The tire pressure warning valve and transmitter is powered by a lithium battery. When disposing of the tire pressure warning valve and transmitter, remove the battery and dispose of it correctly.

1. **DISPOSE OF TIRE PRESSURE WARNING VALVE AND TRANSMITTER**
   a. Use the tip of a screwdriver to pry off the back cover.

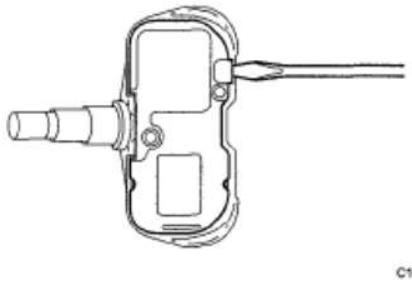


Fig. 62: Prying Off Back Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Cut the 2 terminals that connect the battery to the base board to remove the battery.

      HINT:

      The battery and base board are covered with silicone.

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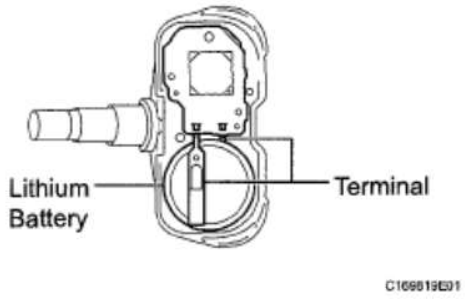


Fig. 63: Identifying Lithium Battery
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TIRE PRESSURE WARNING ECU

COMPONENTS

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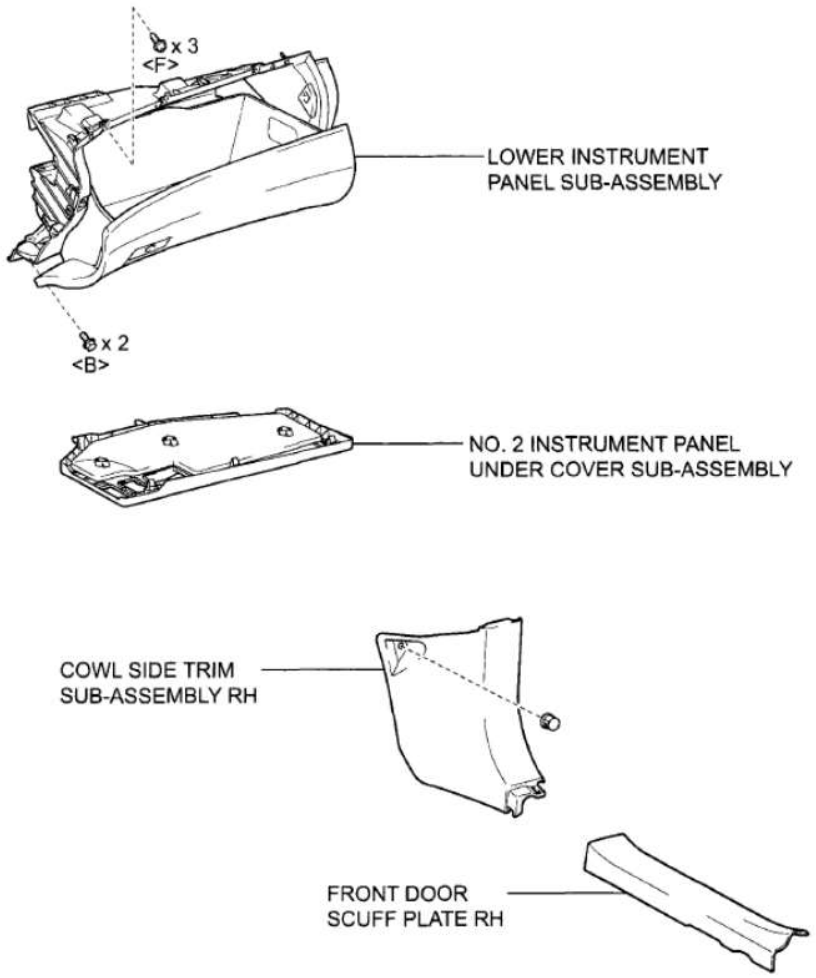


Fig. 64: Identifying Tire Pressure Warning ECU Components With Torque Specification (1 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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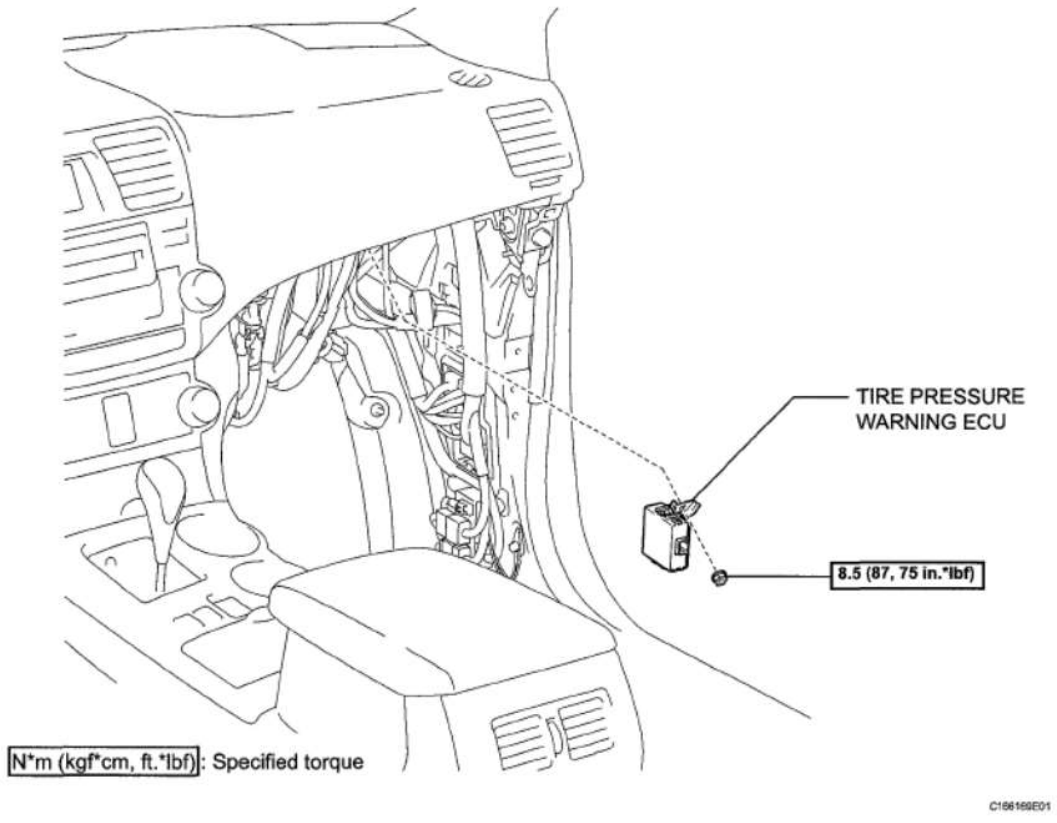


Fig. 65: Identifying Tire Pressure Warning ECU Components With Torque Specification (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

NOTE: Before removing the tire pressure warning ECU, read the registered transmitter IDs of all wheels and write them down to use for re-registration of transmitter IDs (See REGISTRATION).

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

   NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected (See INITIALIZATION).

2. **REMOVE FRONT DOOR SCUFF PLATE RH** (See **REMOVAL**)
3. **REMOVE COWL SIDE TRIM SUB-ASSEMBLY RH** (See **REMOVAL**)
4. **REMOVE NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
5. **REMOVE LOWER INSTRUMENT PANEL SUB-ASSEMBLY** (See **REMOVAL**)
6. **REMOVE TIRE PRESSURE WARNING ECU**
   a. Remove the nut.

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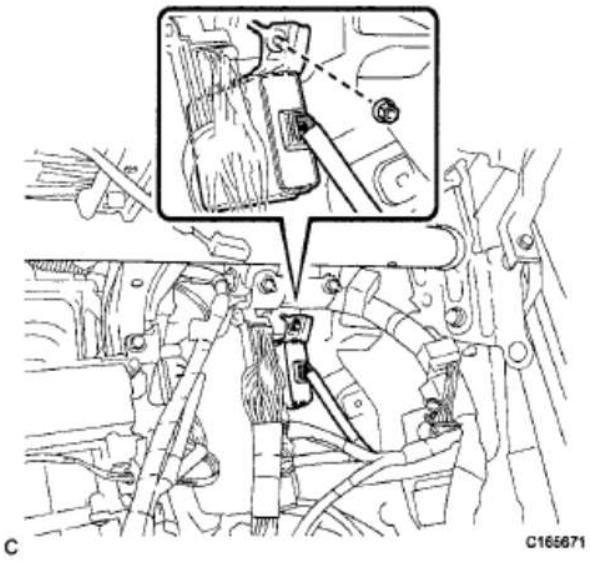


Fig. 66: Identifying Tire Pressure Warning ECU Connector Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Disconnect the connector and remove the tire pressure warning ECU.

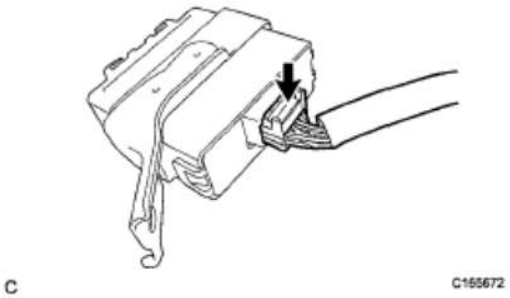


Fig. 67: Locating Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING ECU**
   a. Connect the connector to the tire pressure warning ECU.

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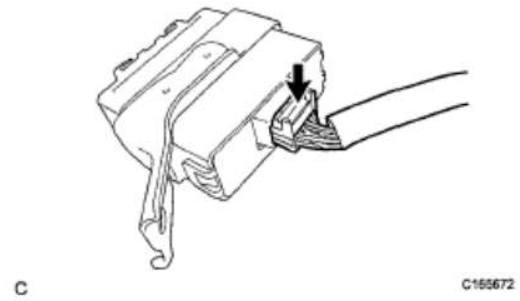


Fig. 68: Locating Tire Pressure Warning ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install the tire pressure warning ECU with the nut.

Torque: 8.5 N*m (87 kgf*cm, 75 in.*lbf)

2. **INSTALL LOWER INSTRUMENT PANEL SUB-ASSEMBLY** (See **INSTALLATION**)
3. **INSTALL NO. 2 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
4. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY RH** (See **INSTALLATION**)
5. **INSTALL FRONT DOOR SCUFF PLATE RH** (See **INSTALLATION**)
6. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

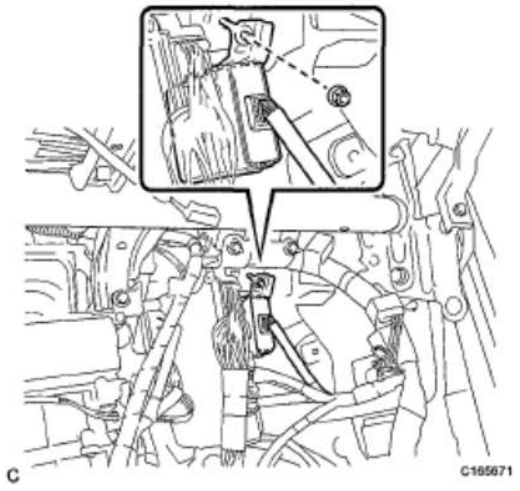


Fig. 69: Identifying Tire Pressure Warning ECU Connector Nut
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected (See INITIALIZATION).**

7. **REGISTER TRANSMITTER ID**

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HINT:

See **REGISTRATION**.

8. **INSPECT TIRE PRESSURE WARNING SYSTEM**

HINT:

See **TEST MODE PROCEDURE**.

9. **INITIALIZE SYSTEM**

NOTE:

- **Be sure to register the transmitter IDs of all tires in the ECU before initialization.**
- **Be sure to inflate all tires to the proper inflation pressure before initialization.**

HINT:

See **INITIALIZATION**.

TIRE PRESSURE WARNING RESET SWITCH

COMPONENTS

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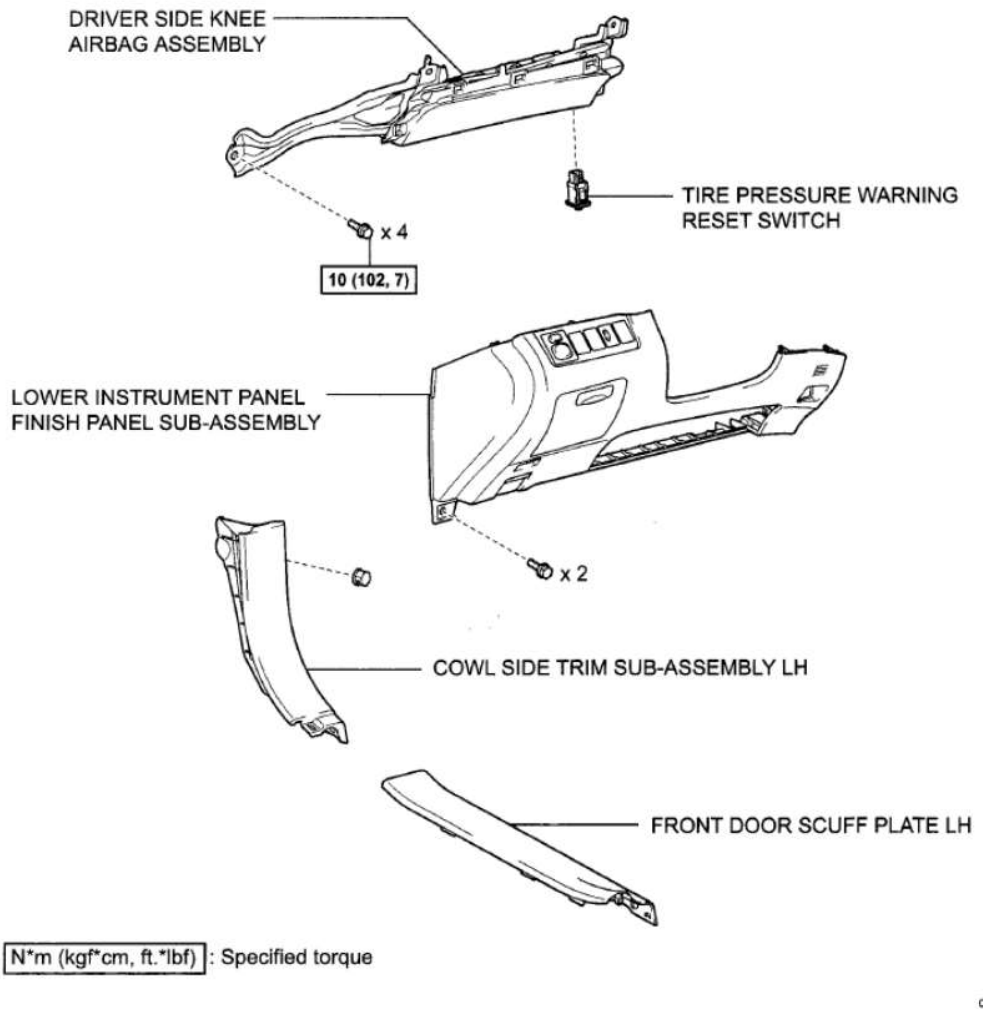


Fig. 70: Identifying Tire Pressure Warning Reset Switch Components With Torque Specification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

CAUTION: Some of these service operations affect the SRS airbag system. Read the precautionary notices concerning the SRS airbag system before servicing the tire pressure warning reset switch (see AIRBAG SYSTEM).

1. **DISCONNECT CABLE FROM NEGATIVE BATTERY TERMINAL**

CAUTION: Wait at least 90 seconds after disconnecting the cable from the negative (-) battery terminal to prevent airbag and seat belt pretensioner activation.

NOTE: When disconnecting the cable, some systems need to be initialized after the cable is reconnected (See INITIALIZATION).

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2. **REMOVE FRONT DOOR SCUFF PLATE LH** (See **REMOVAL**)
3. **REMOVE COWL SIDE TRIM SUB-ASSEMBLY LH** (See **REMOVAL**)
4. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (for Manual Air Conditioning System)** (See **REMOVAL**)
5. **REMOVE LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (for Automatic Air Conditioning System)** (See **REMOVAL**)
6. **REMOVE DRIVER SIDE KNEE AIRBAG ASSEMBLY** (See **REMOVAL**)
7. **REMOVE TIRE PRESSURE WARNING RESET SWITCH**
   a. Disengage the 2 claws and remove the tire pressure warning reset switch from the driver side knee airbag.

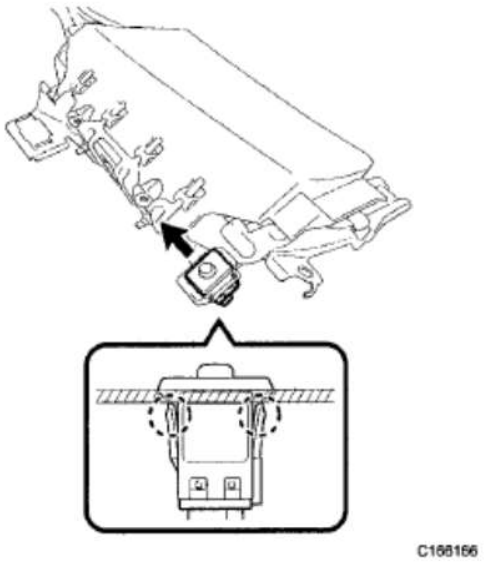


Fig. 71: Locating Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT TIRE PRESSURE WARNING RESET SWITCH**
   a. Remove the tire pressure warning reset switch.
   b. Measure the resistance according to the value (s) in the table below.

Standard resistance

STANDARD RESISTANCE SPECIFICATION

Tester Connection	Switch Condition	Specified Condition
D32-1 - D32-2	ON	Below 1 ohms
	OFF	10 kohms or higher

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If the result is not as specified, replace the tire pressure warning reset switch.

Component without harness connected:
(Tire Pressure Warning Reset Switch)

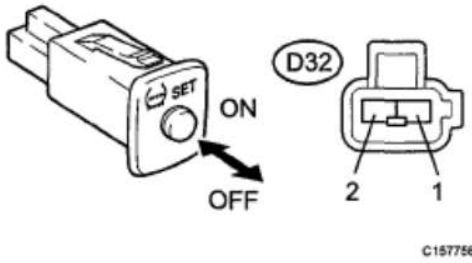


Fig. 72: Inspecting Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING RESET SWITCH**
   a. Engage the 2 claws to install the tire pressure warning reset switch to the driver side knee airbag.
2. **INSTALL DRIVER SIDE KNEE AIRBAG ASSEMBLY** (See **INSTALLATION**)
3. **INSTALL LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (for Manual Air Conditioning System)** (See **INSTALLATION**)
4. **INSTALL LOWER INSTRUMENT PANEL FINISH PANEL SUB-ASSEMBLY (for Automatic Air Conditioning System)** (See **INSTALLATION**)

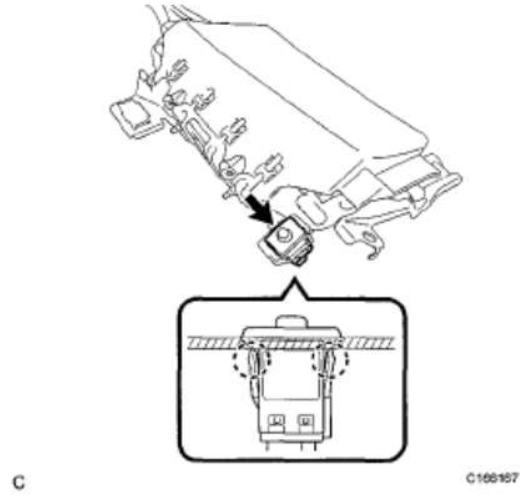


Fig. 73: Locating Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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5. **INSTALL COWL SIDE TRIM SUB-ASSEMBLY LH** (See **INSTALLATION**)
6. **INSTALL FRONT DOOR SCUFF PLATE LH** (See **INSTALLATION**)
7. **CONNECT CABLE TO NEGATIVE BATTERY TERMINAL**

NOTE: **When disconnecting the cable, some systems need to be initialized after the cable is reconnected (See INITIALIZATION).**

8. **INSPECT TIRE PRESSURE WARNING SYSTEM**

HINT:

See **TEST MODE PROCEDURE**.

9. **INSPECT SRS WARNING LIGHT**

HINT:

See **DIAGNOSIS SYSTEM** .

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