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TIRE AND WHEEL SYSTEM

INSPECTION

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

   Cold tire inflation pressure

   COLD TIRE INFLATION PRESSURE CHART

Tire Size	Front	Rear
195/60R16 89H	230 kPa (2.3 kgf/cm^2 , 33 psi)	230 kPa (2.3 kgf/cm^2 , 33 psi)

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

   Tire runout:

   1.4 mm (0.055 in.) or less

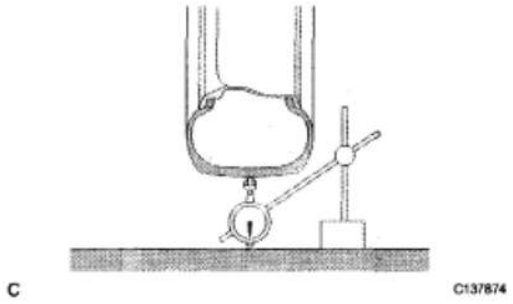


Fig. 1: Checking Runout Of Tires
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2. **ROTATE TIRES**

   HINT:

   Rotate the tires as shown in illustration.

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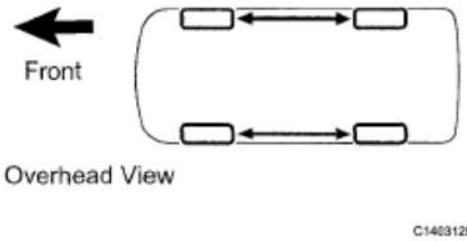


Fig. 2: Identifying Tire Rotation Pattern
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **INSPECT WHEEL BALANCE**
   a. Check and perform off-car balancing.

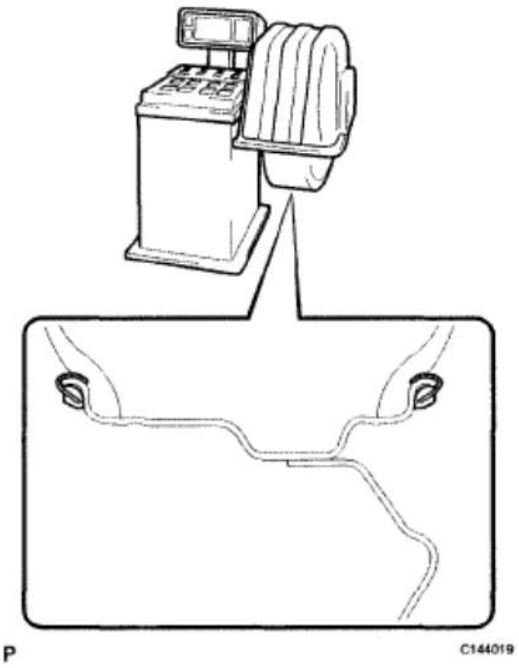


Fig. 3: Identifying Wheel Balance Machine
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. If required, perform on-car balancing.

   Imbalance after adjustment:

   8.0 g (0.018 lb.) or less

4. **INSPECT FRONT AXLE HUB BEARING**

   (See **ON-VEHICLE INSPECTION**)

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5. **INSPECT REAR AXLE HUB BEARING**

   (See **ON-VEHICLE INSPECTION**)

TIRE PRESSURE WARNING SYSTEM

PRECAUTION

1. **TIRE PRESSURE WARNING SYSTEM PRECAUTION**
   a. When the tire pressure warning light turns on, immediately check the tire pressures and adjust them to the specified value. (The tire pressure warning light will come on after blinking for 1 minute if there is an open in the tire pressure warning light circuit.)

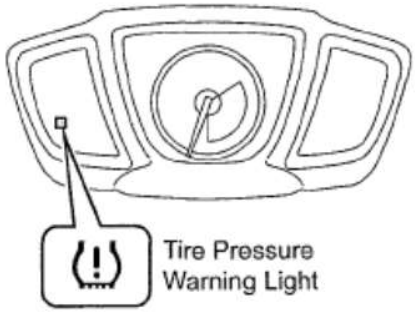


Fig. 4: Identifying Tire Pressure Warning Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Cold Tire Inflation Pressure

COLD TIRE INFLATION PRESSURE CHART

Tire Size	Front Pressure	Rear Pressure
195/60R16 89H	230 kPa (2.3 kgf/cm^2 , 33 psi)	230 kPa (2.3 kgf/cm^2 , 33 psi)

   b. When the tire pressure warning light turns 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 the 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.

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e. When replacing the tire pressure warning valve and transmitter:

1. Take a note of the 7 digit number (transmitter ID) written on the new tire pressure warning valve and transmitter when replacing the old one. Register the transmitter ID in the tire pressure warning ECU after replacing the tire pressure warning valve and transmitter and installing the tires and wheels on the vehicle.

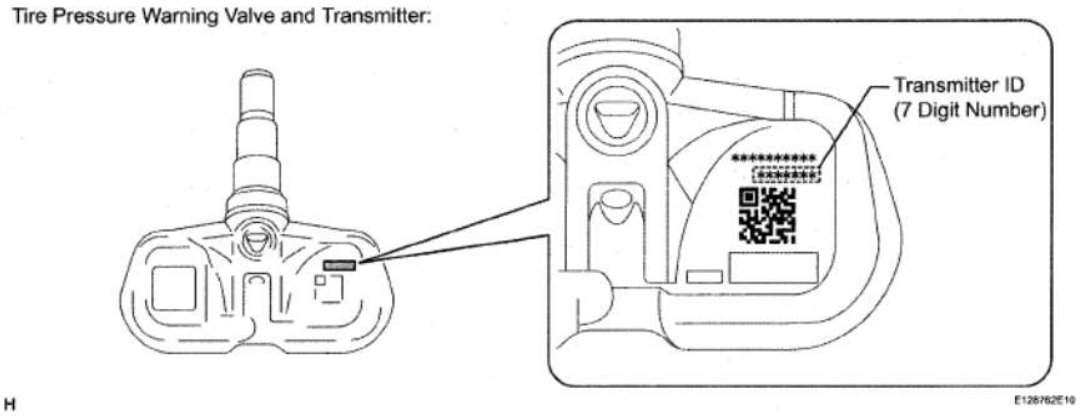


Fig. 5: Identifying 7 Digit Number (Transmitter ID)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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 pressure warning valve and transmitter on the tire and wheel. Therefore, take a note of the transmitter ID before installing the tire pressure warning valve and transmitter.

f. When replacing the tire pressure warning ECU and the tire pressure warning valves and transmitters: It is necessary to perform initialization (See **INITIALIZATION**) after the registration (See **REGISTRATION**).

g. Precautions about the tire pressure:

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

2. **IN CASE OF TIRE AND WHEEL REPLACEMENT**

a. When tires and wheels are replaced, always ensure that each transmitter ID is correctly registered.

3. **INITIALIZATION PRECAUTION**

a. Initialize the tire pressure warning system after any of the following is performed:

- Replacing the tire pressure warning ECU and/or the tire pressure warning valve and

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transmitter

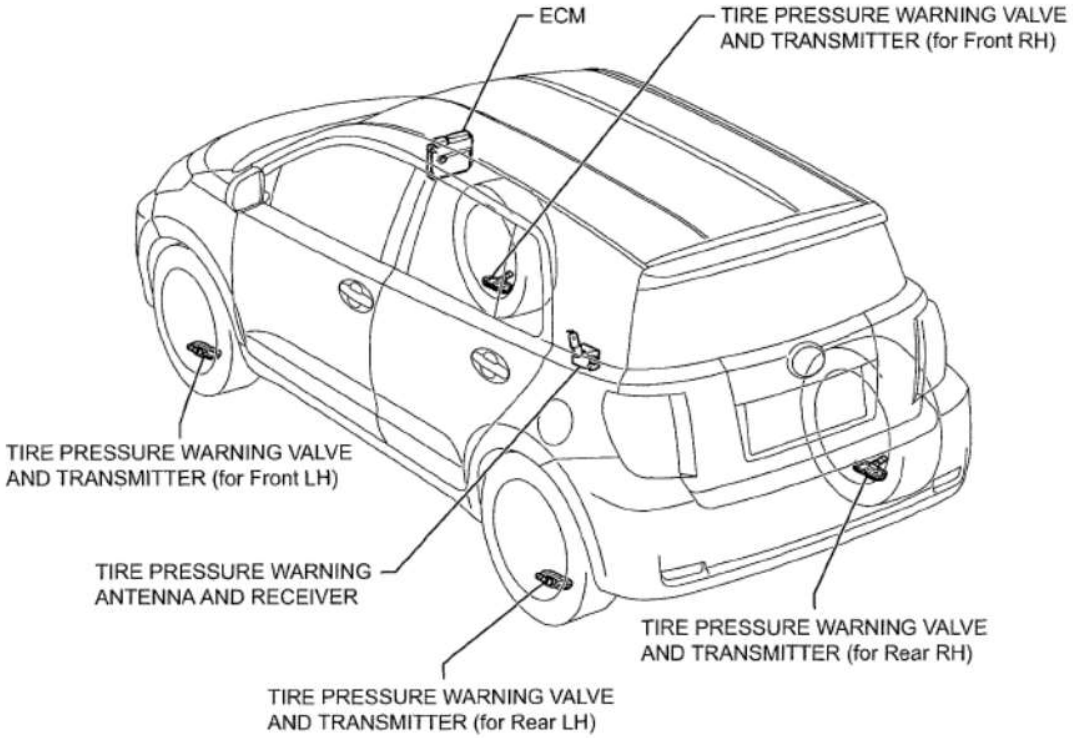
- Rotating tires on vehicles with differing front and rear tire inflation pressures.

HINT:

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

4. **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.
5. **CHECK TIRE PRESSURE AFTER REPAIRS**
   a. After repairs, confirm that the actual tire pressures are displayed in the 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)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

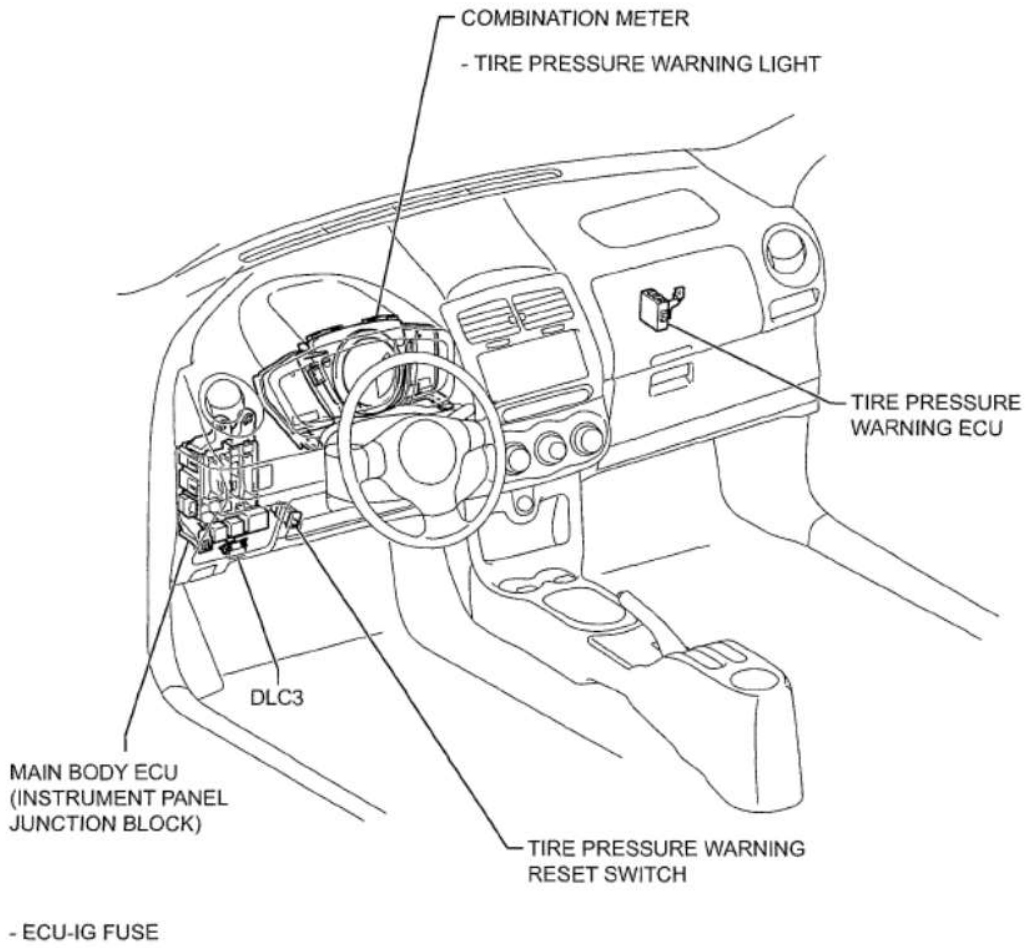


Fig. 7: Identifying Tire Pressure Warning System Parts Location (2 Of 2)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

SYSTEM DIAGRAM

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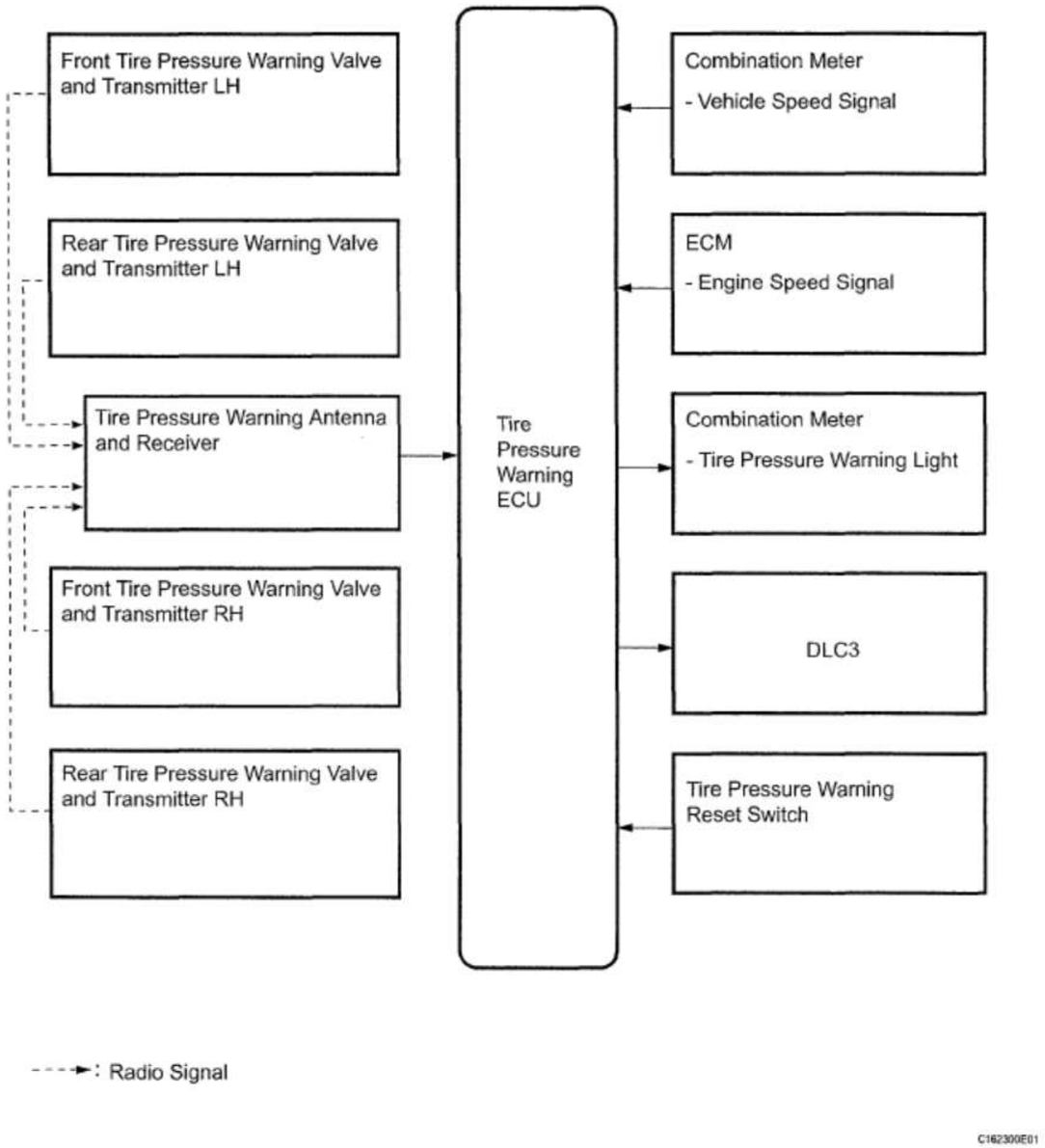


Fig. 8: Tire Pressure Warning System - System Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

The 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

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transmitter and is installed in each tire 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 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.

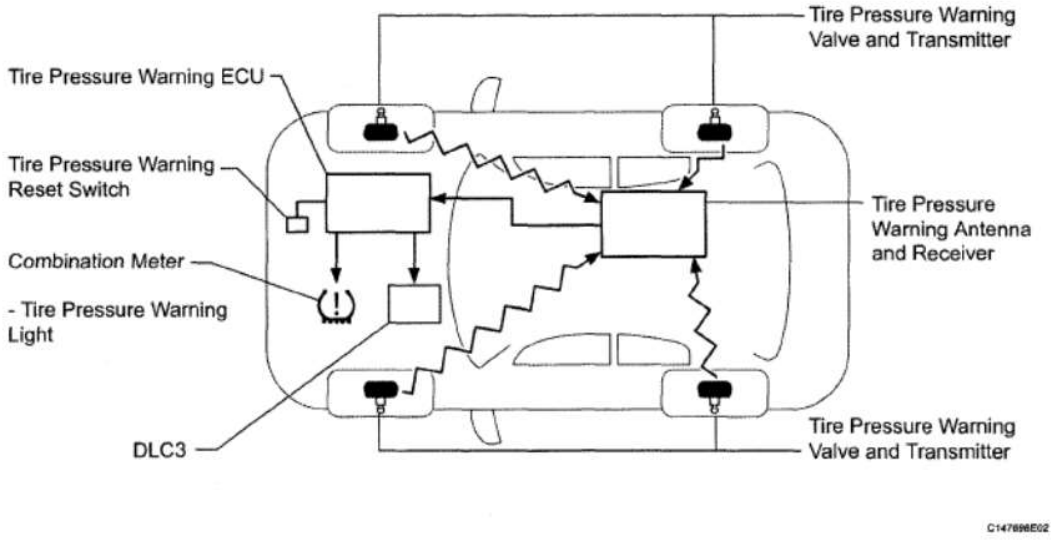


Fig. 9: Identifying Tire Pressure Warning Valve And Transmitter Location
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INITIAL CHECK**

a. After the ignition switch is turned to ON, 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 pressure warning light circuit.

TROUBLE AREA CHART

Trouble Area	Proceed to
Tire pressure warning light circuit	**TIRE PRESSURE WARNING LIGHT CIRCUIT**

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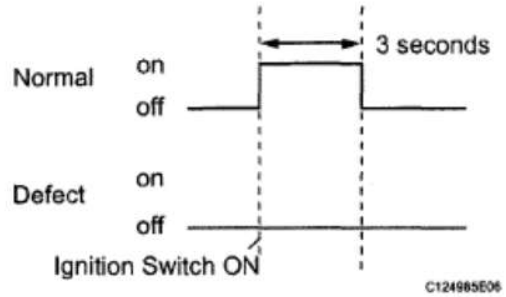


Fig. 10: Identifying Ignition Switch On/Off Position
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. **WHEN TIRE PRESSURE WARNING LIGHT IS LIT**
   a. When the tire pressure warning light does not go off, or when it turns on during driving, check the tire pressure. If the tire pressure warning light turns on within several hours of adjusting the tire pressure, the tire may have a slow air leak.
   b. Under the following conditions, the system may not function 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 large amount of snow or ice is stuck to the vehicle, especially onto the wheels and around the wheel houses.
      - The battery of the sensor has been depleted.
      - Tires without a tire pressure warning valve and transmitter are used.
      - Tire chains are used.
      - If any wheels other than the specified ones are used, the system may not function properly because interference may prevent the radio waves from being correctly transmitted from the tire pressure warning valve and transmitter.
      - A type of film that affects radio waves is attached to the windows.
      - Depending on the tire type, the system may not function properly even if the specified wheels are used.
      - 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).
   c. The average usage life of the grommet of the tire pressure warning valve and transmitter is approximately 10 years, at which time it must be replaced.

      If a tire pressure warning valve and transmitter is removed from a wheel, replace the grommets.

   d. After removing and installing the ECU or a sensor, check for a diagnostic trouble code and verify that it is a normal code.
4. **FUNCTION OF COMPONENTS**

FUNCTION OF COMPONENTS

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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 values and identification. Has a built-in battery.
Tire pressure warning antenna and receiver	Receives signals from a transmitter and sends the signals to the tire pressure warning ECU.
Tire pressure warning ECU	Receives the signal from the receiver and identifies it as the vehicle's own signal. If the measured value is equal to or lower than the specified value, it transmits a signal so that the tire pressure warning light on the combination meter turns on.
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 for tire or wheel replacement.

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 type of tires. Therefore, the dealer must set the warning threshold to the proper value in order to comply with 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 in the ON position. When the system receives the initialization signal, 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 tires, and registers the signals that are transmitted into the tire pressure warning ECU at a frequency of once per minute. The initialization process is completed when signals from all tires have been received.

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

- Use these procedures to troubleshoot the tire pressure warning system.
- *: Use a 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.

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3. **ADJUST TIRE PRESSURE***
   a. Turn the ignition switch off.
   b. Connect a Techstream to the DLC3.
   c. Turn the ignition switch to ON and 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 **INSPECTION**).
   g. Check the Data List (See **DATA LIST / ACTIVE TEST**).

      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 CHART

Result	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 DTC (See **DTC CHECK/CLEAR**).

      Result

      RESULT CHART

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 the **DIAGNOSTIC TROUBLE CODE CHART** .

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NEXT: Go to step 8

6. **PROBLEM SYMPTOMS TABLE**
   a. Refer to the **PROBLEM SYMPTOMS TABLE** .
7. **CIRCUIT INSPECTION***
   a. Refer to the ELECTRONIC CIRCUIT INSPECTION PROCEDURE (See **ELECTRONIC CIRCUIT INSPECTION PROCEDURE**).
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 ID in the tire pressure warning ECU when replacing the tire pressure warning valve and transmitter and/or tire pressure warning ECU.

Prepare all transmitter ID data before starting registration.

a. Before registration
   1. In case of tire pressure warning ECU replacement.
      - Read the registered transmitter IDs that are stored in the old ECU using a 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 **PRECAUTION**).
   2. In case of tire pressure warning valve and transmitter replacement.
      - Take a note of the 7 digit number (transmitter ID) written on the tire pressure warning valve and transmitter.

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Tire Pressure Warning Valve and Transmitter:

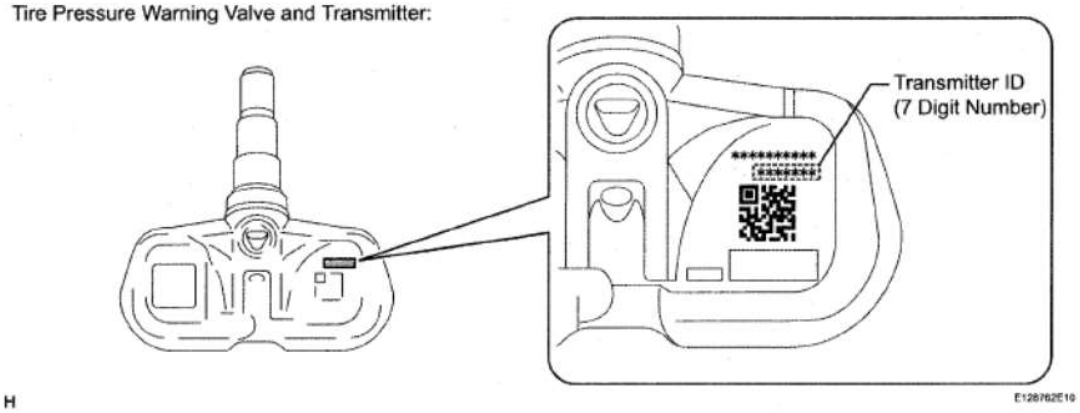


Fig. 11: Identifying 7 Digit Number (Transmitter ID)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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 pressure warning valve and transmitter on the tire and wheel. Therefore, take a note of the transmitter ID before installing the tire pressure warning valve and transmitter.**

2. **REGISTER TRANSMITTER ID**
   a. Set the air pressure of all wheels to the specified value (See **PRECAUTION**).
   b. Turn the ignition switch off.
   c. Connect a Techstream to the DLC3.
   d. Turn the ignition switch to ON and the Techstream on.
   e. Enter the following menus: Chassis / Tire Pressure Monitor / Utility / ID Registration /
   f. Perform the following procedures displayed on the screen.

      HINT:

      - The previously registered IDs will be deleted from the memory when the registration is completed.
      - Registration can be performed during initialization. However, the initialization will be cancelled when the registration is started.

   g. Confirmation of transmitter ID registration.
      1. Enter the following menus: 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**

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minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24 (See DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)).

- **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 a few 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

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 the tire pressure warning valve and transmitter*.
      - When the 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

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1. Set the air pressure of all wheels to the specified value (See **PRECAUTION**).

NOTE: Make sure the tires are cooled down.

2. **INITIALIZATION PROCEDURE**
   a. Turn the ignition switch to ON.
   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.

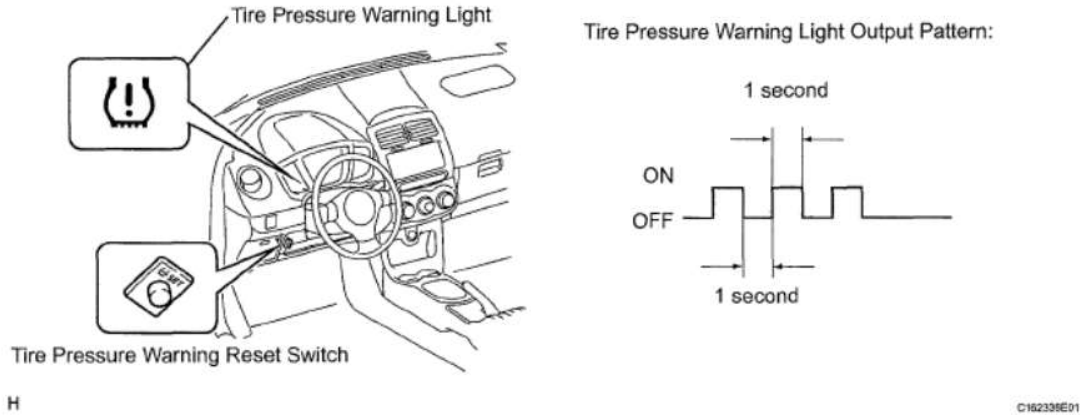


Fig. 12: Identifying Tire Pressure Warning Reset Switch And Tire Pressure Warning Light
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

NOTE:

- **The initialization is normally completed within 2 to 3 minutes.**
- **If the initialization has not been completed successfully, DTC C2177/77 is set after a vehicle speed of 8 km/h (5 mph) or more continues for 20 minutes or more.**
- **The initialization can be terminated by connecting terminals TC and CG of the DLC3 connector.**

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Front view of DLC3:

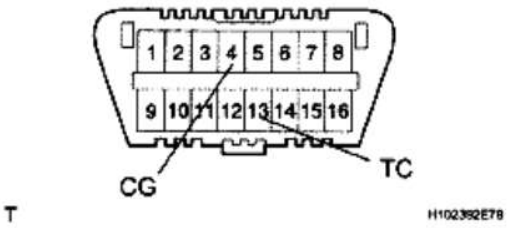


Fig. 13: Identifying DLC3 Connector Terminals
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Tire Pressure Monitor

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*

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	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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- The initialization is complete when the Data List "ID Tire Inflation Pressure" display shows the correct pressures.
- *: 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 C2124/24 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**).

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TEST MODE PROCEDURE

1. **TEST MODE PROCEDURE**

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 a Techstream to the DLC3.
c. Turn the ignition switch to ON.
d. Check that the tire pressure warning light turns 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:

- When entering signal check mode, the tire pressure warning ECU sets all the signal check DTCs first. After completing the 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.

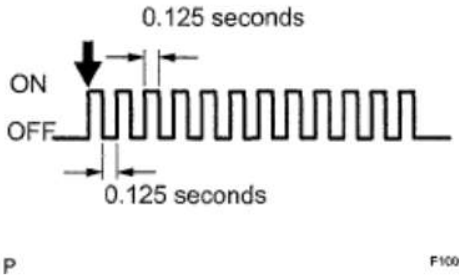


Fig. 14: Identifying Blinking Pattern
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- When signal check returns to normal mode, all the signal check DTCs will be erased.

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

   HINT:

   Every time the test mode DTC erasure conditions are satisfied, the tire pressure warning light turns 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 20 km/h (12 mph) 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 (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds) to check the transmitter data (C2181/81 to C2184/84).

   HINT:

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

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

TEST MODE CHART

Test Mode DTC	Test Signal	Test Mode DTC Clear Condition
C2181/81 to C2184/84	Transmitter Data	Receive data from the transmitter which has a registered ID in the tire pressure warning ECU
C2191/91	Vehicle Speed Signal	Vehicle speed of 20 km/h (12 mph) 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 more

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

TIRE PRESSURE WARNING LIGHT SPECIFICATIONS

Test Signal	Normal Condition
Tire Pressure Warning Reset Switch	• Switch ON: Tire pressure warning light turns on. • Switch OFF: Tire pressure warning light blinks at 0.125 second intervals.

j. Result

HINT:

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

RESULT CHART

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 "See" below.

DIAGNOSTIC TROUBLE CODE CHART

DTC No.	Detection Item	Trouble Area
		• Tire pressure warning

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		valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU
C2181/81	Transmitter ID1 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU
C2182/82	Transmitter 1D2 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU
C2183/83	Transmitter ID3 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU
C2184/84	Transmitter ID4 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU
C2191/91	Vehicle speed signal error	• Combination meter • 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:

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- 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 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

TIRE PRESSURE WARNING SYSTEM CHART

Symptom	Suspected Area	See
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 AND WHEEL SYSTEM
	ID code check (Registration)	REGISTRATION
	Initialization	INITIALIZATION
Initialization cannot be done	Tire pressure warning reset switch circuit	TIRE PRESSURE WARNING RESET SWITCH CIRCUIT
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

HINT:

Inspect the connectors from the back side.

1. **CHECK TIRE PRESSURE WARNING ECU**

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Fig. 15: Identifying Tire Pressure Warning ECU Connector Terminals
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a. Disconnect the L16 tire pressure warning antenna and receiver connector.
b. Measure the voltage according to the value(s) in the table below.

TERMINAL DESCRIPTION SPECIFIED CONDITION CHART

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
F26-12 (RDA) - F26-9 (GND)	B - W-B	Tire pressure warning antenna and receiver signal	Ignition switch ON	11 to 14 V

c. Connect the L16 tire pressure warning antenna and receiver connector.
d. Measure the voltage and resistance according to the value(s) in the table below.

TERMINAL DESCRIPTION SPECIFIED CONDITION CHART

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
F26-1 (CLSW) - F26-9 (GND)	L - W-B	Tire pressure warning reset switch	Ignition switch ON Tire pressure warning reset switch OFF	11 to 14 V
			Ignition switch ON Tire pressure warning reset switch ON	Below 1.5 V
F26-2 (SPD) - F26-9 (GND)	V - W-B	Vehicle speed signal	Vehicle is running	Pulse generation (see d waveform 1)
F26-3 (TC) - F26-9 (GND)	G - W-B	TC terminal	When terminal TC is not connected	11 to 14 V
F26-4 (TACH) - F26-9 (GND)	LG - W-B	Engine speed signal	Engine is running	Pulse generation (see e waveform 2)
F26-5 (IND) - F26-9 (GND)	O - W-B	Tire pressure warning light output signal	After ignition switch is turned ON, when tire pressure warning light illuminates for 3 seconds	0.9 to 3.2 V
			Ignition switch ON Tire pressure warning light off	3.2 V or higher

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F26-6 (RF5V) - F26-9 (GND)	W - W-B	Tire pressure warning antenna and receiver power source	Ignition switch ON	4.5 to 5.5 V
F26-7 (IG) - F26-9 (GND)	R - W-B	IG power source	Ignition switch ON	11 to 14 V
F26-9 (GND) - Body ground	W-B - Body ground	Ground	Always	Below 1 ohms
F26-10 (SIL) - F26-9 (GND)	W - W-B	Diagnosis tester communication line	Ignition switch ON, when communication is not performed with a tester	11 to 14 V
F26-11 (GND2)-F26-9 (GND)	GR - W-B	Tire pressure warning antenna and receiver ground	Always	Below 1 ohms

e. Using an oscilloscope, check the waveform 1.

WAVEFORM REFERENCE

Item	Contents
Terminal No. (Symbols)	F26-2 (SPD) - F26-9 (GND)
Tool Setting	5V/DIV., 200 ms/DIV.
Vehicle Condition	While driving at approximately 20 km/h (12 mph).

HINT:

The wavelength becomes shorter as the vehicle speed increases.

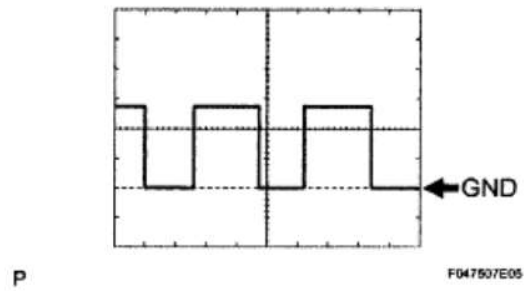


Fig. 16: Identifying Waveform 1
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f. Using an oscilloscope, check the waveform 2.

WAVEFORM REFERENCE

Item	Contents
Terminal No. (Symbols)	F26-4 (TACH) - F26-9 (GND)
Tool Setting	5V/DIV., 10 ms/DIV.

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Vehicle Condition	Idling

HINT:

The wavelength becomes shorter as the engine speed increases.

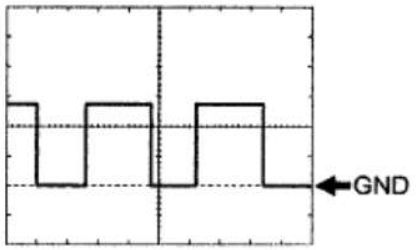


Fig. 17: Identifying Waveform 2
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DIAGNOSIS SYSTEM

1. **CHECK 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 light blinks at 0.5 second intervals, and turns on after 1 minute.

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



Fig. 18: Identifying Tire Pressure Warning Light
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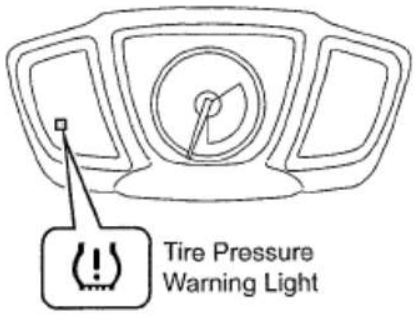
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b. DTCs (Normal mode)
   1. DTCs are memorized in the tire pressure warning ECU and read by the blinks of the tire pressure warning light or by using a Techstream (See **DTC CHECK/CLEAR**).

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, the engine speed signal and the vehicle speed sensor (See **TEST MODE PROCEDURE**).

3. **CHECK WARNING LIGHT**
   a. Turn the ignition switch to ON.
   b. Check that the tire pressure warning light turns on for 3 seconds.

   If the warning check result is not normal, proceed to the troubleshooting for the tire pressure warning light circuit.



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Fig. 19: Identifying Tire Pressure Warning Light
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TROUBLE AREA CHART

Trouble Area	See Procedure
Tire pressure warning light circuit	**TIRE PRESSURE WARNING LIGHT CIRCUIT**

4. **TIRE PRESSURE WARNING LIGHT CHART**

HINT:

The table below indicates the state of the tire pressure warning light after the ignition switch is turned to ON.

TIRE PRESSURE WARNING LIGHT CHART

	Immediately after turning the ignition	Always

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Condition	switch to ON	Warning light output pattern						
	Turns on for 3 seconds	Goes off	Turns on	Blinks for 1 minute and then illuminates (*1)	Blinks (*2)	Blinks (*3)	Blinks (*4)	Output 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: Turns on and goes off repeatedly at 0.5 second intervals, and turns on after 1 minute.

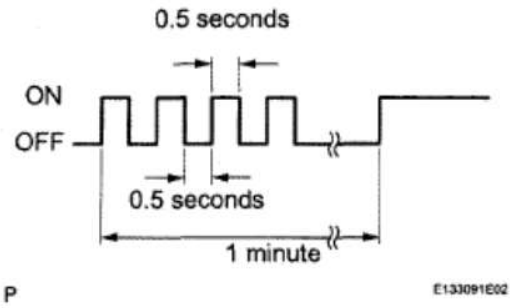


Fig. 20: Identifying Tire Pressure Warning Light Blinking Pattern (1 Of 5)
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*2: Turns on and goes off repeatedly at 0.125 second intervals.

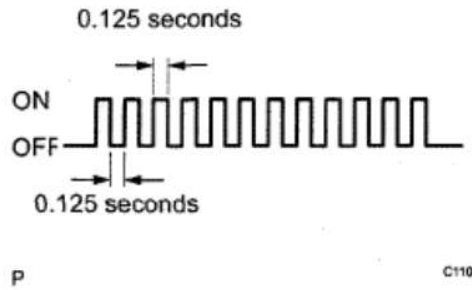


Fig. 21: Identifying Tire Pressure Warning Light Blinking Pattern (2 Of 5)

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

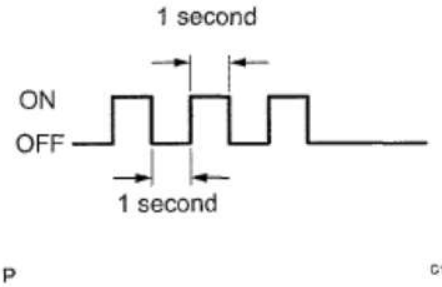


Fig. 22: Identifying Tire Pressure Warning Light Blinking Pattern (3 Of 5)
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*4: Turns on and goes off repeatedly at 0.25 seconds interval.

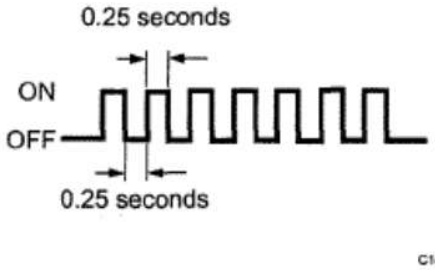


Fig. 23: Identifying Tire Pressure Warning Light Blinking Pattern (4 Of 5)
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*5: When determining if there is a short circuit (10 seconds), the light is off. Then it blinks at 0.5 second intervals, and turns on after 1 minute.

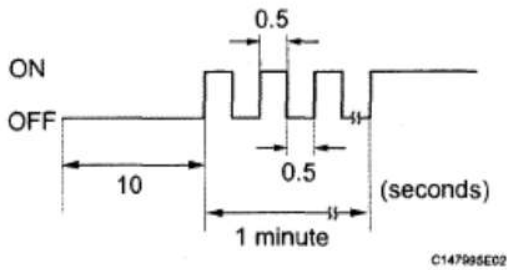


Fig. 24: Identifying Tire Pressure Warning Light Blinking Pattern (5 Of 5)
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DTC CHECK/CLEAR

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

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a. Turn the ignition switch off.
b. Connect a Techstream to the DLC3.
c. Turn the ignition switch to ON and 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 tester operator's manual for further details.

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

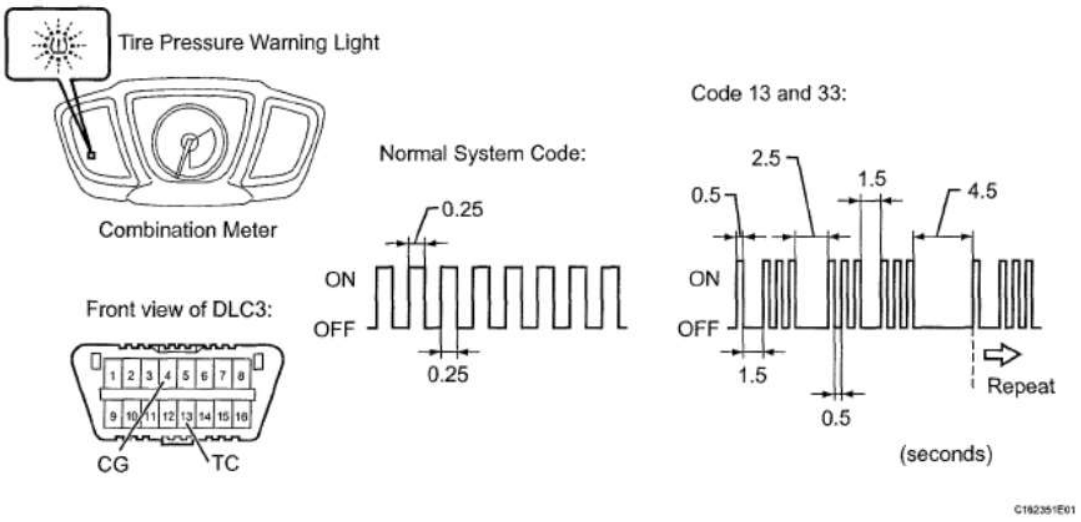


Fig. 25: Identifying Blinking Pattern
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   b. Using SST, connect terminals 13 (TC) and 4 (CG) of the DLC3.

SST 09843-18040

   c. Turn the ignition switch to ON.
   d. Read and record any DTCs from the tire pressure warning light on the combination meter. Refer to the illustration above for examples of a normal system code and codes 13 and 33.

HINT:

- 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.

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TROUBLE AREA CHART

Trouble Area	See
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** for DTC information.

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

SST 09843-18040

3. **CLEAR DTC**

HINT:

After repairing the malfunctions, clear the DTCs.

a. Turn the ignition switch off.
b. Connect a Techstream to the DLC3.
c. Turn the ignition switch to ON and 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 tester operator's manual for further details.

DATA LIST / ACTIVE TEST

1. **READ DATA LIST**

HINT:

Using a 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.

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b. Connect a Techstream to the DLC3.
c. Turn the ignition switch to ON.
d. Turn the tester on.
e. Enter the following menus: Chassis / Tire Pressure Monitor / Data List /
f. According to the display on tester, read the "Data List".

Tire Pressure Monitor

TIRE PRESSURE MONITOR CHART

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 tire IDs to be registered/ 0 or 1 or 2 or 3 or 4	0 to 4 should be 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.: 0 max.: FFFFFFF*1	The ID No. registered in the transmitter 1D4 is displayed	-
Initialization Switch	Tire pressure warning reset switch/ ON or OFF	ON: Switch on OFF: Switch off	-
ID Transmission Status	ID transmission status/ Finish or Now	Finish or Now	-
	ID1 tire inflation pressure/ min.: Absolute pressure/0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa		If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure

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ID1 Tire Inflation Pressure	(-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	or -100 kPa (-1 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received *2
ID2 Tire Inflation Pressure	ID2 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 ,92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received *2
ID3 Tire Inflation Pressure	ID3 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*2
ID4 Tire Inflation Pressure	ID4 tire inflation pressure/ min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure 100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*2
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, the 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, the data has not been received.
ID3 Temperature	ID3 temperature in tire/ min.:	Actual tire	If -40°C (-40°F) is displayed,

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in Tire	-40°C (-40°F), max.: 215°C (419°F)	temperature	the 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, the 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	-
Initialization SW Info	Tire pressure warning reset switch setting information/ With or Without	With	-
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	-
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:			

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*1: Displayed only when the ID No. is not registered.
*2: 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 C2124/24 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**).

2. **PERFORM ACTIVE TEST**

HINT:

Using a Techstream to perform Active Tests allows relays, VSVs, actuators 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 Tests early in troubleshooting is one way to save diagnostic time. Data List information can be displayed while performing Active Tests.

a. Turn the ignition switch off.
b. Connect a Techstream to the DLC3.
c. Turn the ignition switch to ON.
d. Turn the tester on.
e. Enter the following menus: Body Electrical / Combination Meter / Active Test /
f. According to the display on tester, perform the "Active Test".

Combination Meter

COMBINATION METER CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire Pressure Warning System	Tire Pressure Warning Light	Tire Pressure Warning Light is ON/OFF	Confirm that the vehicle is stopped with the 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 "See" below.

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DIAGNOSTIC TROUBLE CODE CHART

DTC Code	Detection Item	Trouble Area
C2111/11	Transmitter ID1 Operation Stop	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2112/12	Transmitter ID2 Operation Stop	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2113/13	Transmitter ID3 Operation Stop	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2114/14	Transmitter ID4 Operation Stop	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2121/21	No Signal from Transmitter ID1 in Main Mode	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2122/22	No Signal from Transmitter ID2 in Main Mode	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2123/23	No Signal from Transmitter ID3 in Main Mode	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2124/24	No Signal from Transmitter ID4 in Main Mode	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2126/26	Transmitter ID not Received in	○ ID registration failure

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	Main Mode	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2141/41	Transmitter ID1 Error	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2142/42	Transmitter ID2 Error	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2143/43	Transmitter ID3 Error	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2144/44	Transmitter ID4 Error	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2165/65	Abnormal Temperature Inside ID1 Tire	○ Tires ○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2166/66	Abnormal Temperature Inside ID2 Tire	○ Tires ○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2167/67	Abnormal Temperature Inside ID3 Tire	○ Tires ○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2168/68	Abnormal Temperature Inside ID4 Tire	○ Tires ○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU
C2171/71	Transmitter ID not Registered	Tire pressure warning ECU
C2173/73	Vehicle Speed or Engine Speed Signal Malfunction	○ Combination meter - ECM ○ Harness or connector ○ Tire pressure warning ECU

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C2176/76	Receiver Error	○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2177/77	Initialization not Completed	○ Tire pressure warning valve and transmitter ○ Tire pressure warning ECU ○ Tire pressure warning antenna and receiver ○ Harness or connector
C2181/81	Transmitter ID1 not Received (Test Mode DTC)	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2182/82	Transmitter ID2 not Received (Test Mode DTC)	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2183/83	Transmitter ID3 not Received (Test Mode DTC)	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2184/84	Transmitter ID4 not Received (Test Mode DTC)	○ Tire pressure warning valve and transmitter ○ Tire pressure warning antenna and receiver ○ Harness or connector ○ Tire pressure warning ECU
C2191/91	Vehicle Speed Signal Error (Test Mode DTC)	○ Combination meter ○ Vehicle speed sensor ○ Harness or connector ○ Tire pressure warning ECU
C2194/94	Engine Speed Signal Error (Test	

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	Mode DTC)	○ ECM ○ Harness or connector ○ 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

DESCRIPTION

The tire pressure warning valves and transmitters that are installed in the tire and wheel assemblies measure the air pressures of the tires. 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 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 CHART

DTC No.	DTC Detection Condition	Trouble Area
C2111/11 C2112/12 C2113/13 C2114/14	Tire pressure warning valves 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.

WIRING DIAGRAM

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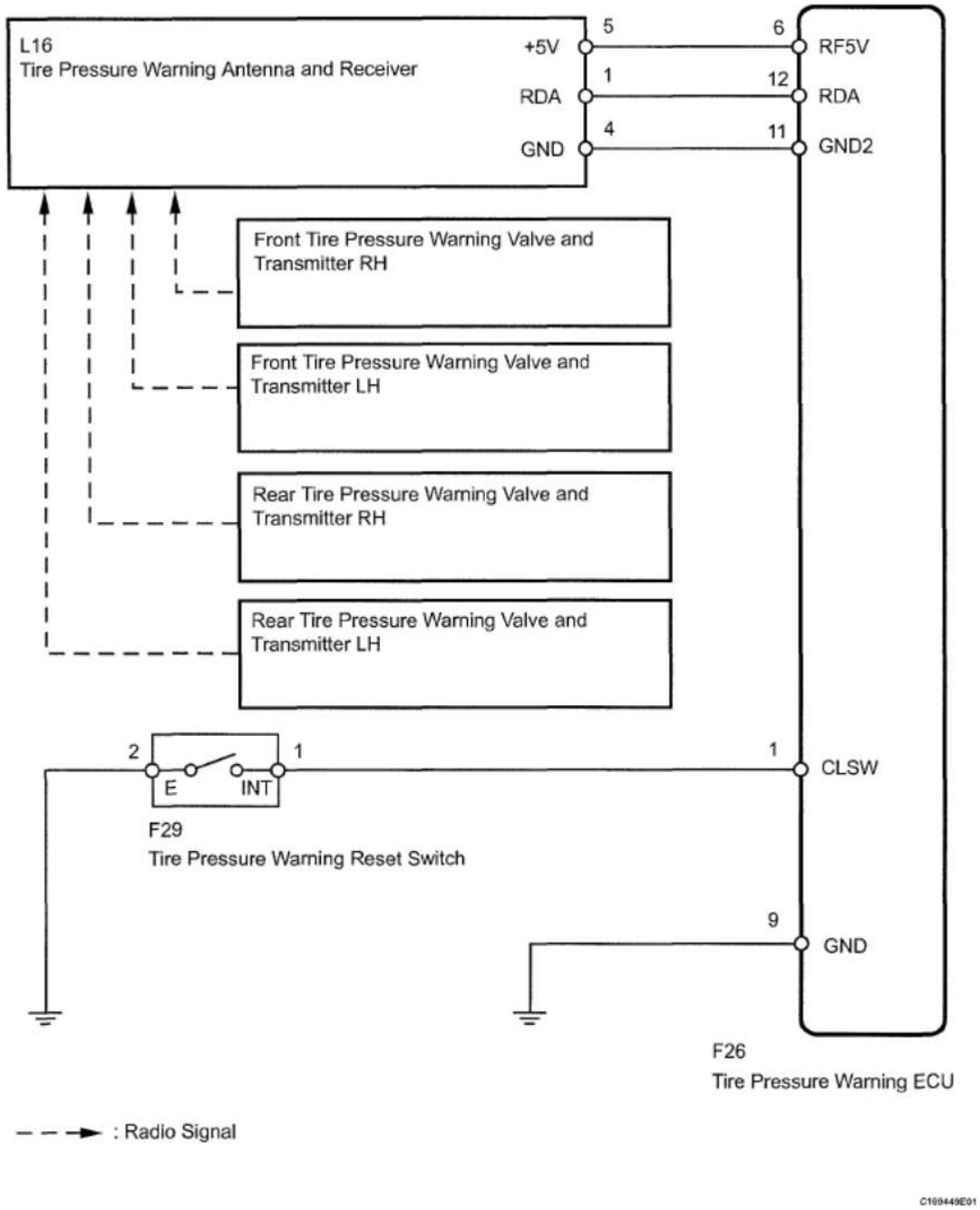


Fig. 26: Transmitter ID1 Operation Stop - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

1. **PERFORM FORCED TRANSMISSION OF TRANSMITTER ID OF ALL WHEELS**
   a. Set the tire pressure to the specified value (See **PRECAUTION**).
   b. Connect a Techstream to the DLC3.

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c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi),	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -100 kPa (-1 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*

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	Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)		

HINT:
*: 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 C2124/24 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**).

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

g. 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 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 it.**

h. 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, inspect for another problem (malfunction in transmission or reception function) (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**).

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NG: GO TO TRANSMITTER AND RECEIVER INSPECTION PROCEDURE (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**)

OK : END

DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)

DESCRIPTION

The tire pressure warning valves and transmitters that are installed in the tire and wheel assemblies measure the air pressure of the tires. 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 valves 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 is unable to receive the signals from the tire pressure warning valves and transmitters, and a DTC is 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 valves and transmitters for a total of 20 minutes, DTCs are set.

DTCs from C2121/21 to C2124/24 can only be cleared by using the tester. DTCs from C2181/81 to C2184/84 can be cleared when the transmitter in the tire pressure warning valve and transmitter sends a forced

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transmission signal or test mode ends. DTCs from C2181/81 to C2184/84 are output only in test mode.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
C2121/21 C2122/22 C2123/23 C2124/24	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 valves 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 valves 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	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 C2124/24 are set, DTC C2173/73 may be set simultaneously. In such cases, troubleshoot C2173/73 first, then troubleshoot DTCs C2121/21 to C2124/24.

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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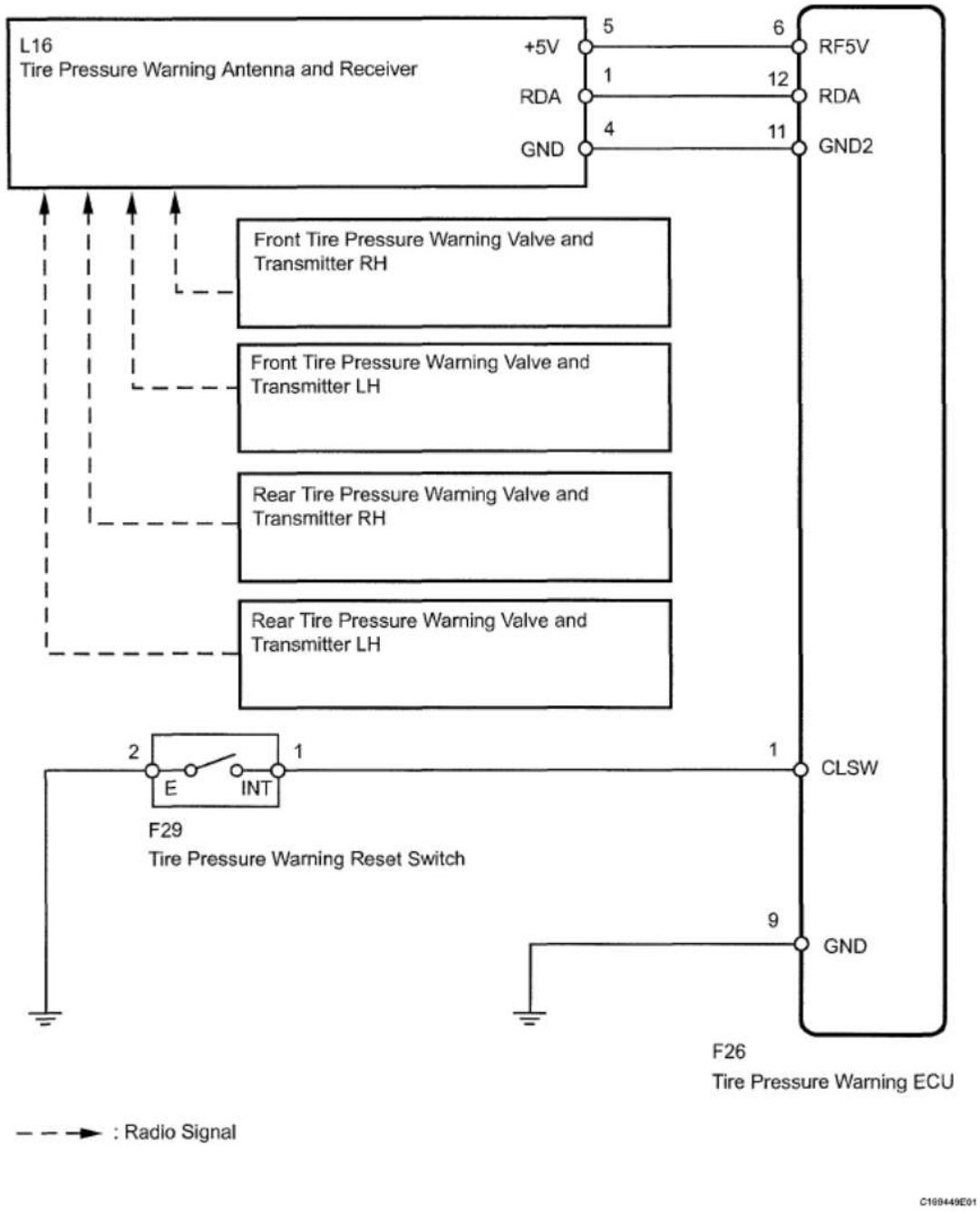


Fig. 27: No Signal From Transmitter ID1 In Main Mode - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

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

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

   Result

   RESULT CHART

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**

A: Go to next step

2. **CHECK FREQUENCY RECEIVING CONDITION**
   a. Check if the vehicle is located in areas such as the ones 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 areas described above, the tire pressure warning light may turn on only in a particular area.

      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.

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HINT:

Radio frequency may be interrupted due to 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 **PRECAUTION**).
   b. Turn the ignition switch off.
   c. Connect a Techstream to the DLC3.
   d. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation	ID3 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 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 kgf/cm^2 , -14 psi) is

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Pressure	max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	pressure	displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: It may take about 2 or 3 minutes until the values are displayed.			

g. Rapidly reduce the tire pressure for each wheel 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 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 it.**
- **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 ID4) has changed, repeat this procedure one by one. Identify the transmitter that corresponds to the DTC.

Result

RESULT CHART

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

B: Go to step 5

C : END

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A: Go to next step

4. **CHECK HARNESS AND CONNECTOR (ECU - RECEIVER)**
   a. Disconnect the F26 ECU connector.
   b. Disconnect the L16 receiver connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
F26-12 (RDA) - L16-1 (RDA)	Always	Below 1 ohms
F26-11 (GND2) - L16-4 (GND)	Always	Below 1 ohms
F26-6 (RF5V) - L16-5 (+5V)	Always	Below 1 ohms
F26-12 (RDA) or L16-1 (RDA) -Body ground	Always	10 kohms or higher
F26-11 (GND2) or L16-4 (GND)-Body ground	Always	10 kohms or higher
F26-6 (RF5V) or L16-5 (+5V) -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 Tire Pressure Warning Antenna
and Receiver)

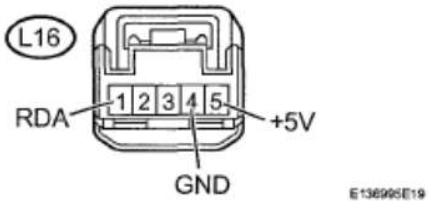


Fig. 28: Checking Harness And Connector (ECU - Receiver)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

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5. **CHECK TRANSMITTER ID**
   a. Turn the ignition switch off.
   b. Connect a Techstream to the DLC3.
   c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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.

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

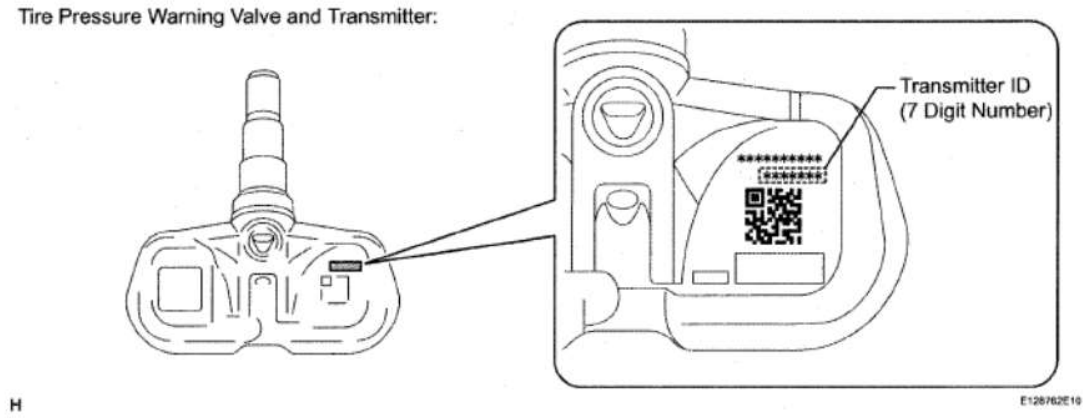


Fig. 29: Identifying 7 Digit Number (Transmitter ID)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

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Result

RESULT CHART

Result	Proceed to
Match	A
Do not match	B

B: Go to step 7

A: Go to next step

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 a Techstream to the DLC3.
   c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire	ID2 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -	Actual tire	If 0 kPa (0 kgf/cm^2 , 0 psi) is displayed for absolute pressure or -

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Inflation Pressure	14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	inflation pressure	100 kPa (-1 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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 it.

Result

RESULT CHART

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 **REMOVAL**).

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11. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
    a. Turn the ignition switch off.
    b. Connect a Techstream to the DLC3.
    c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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), Relative		If 0 kPa (0 kgf/cm^2 , 0 psi) is

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ID4 Tire Inflation Pressure	pressure /-100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)	Actual tire inflation pressure	displayed for absolute pressure or -100 kPa (-1 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: 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 it.

Result

RESULT CHART

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 C2126/26 TRANSMITTER ID NOT RECEIVED IN MAIN MODE

DESCRIPTION

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 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.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
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

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		• Tire pressure warning ECU

HINT:

If the IDs stored in the tire pressure warning ECU differ from the transmitter IDs, DTC C2126/26 is set.

Check that the IDs in the ECU are the same as the transmitter IDs.

WIRING DIAGRAM

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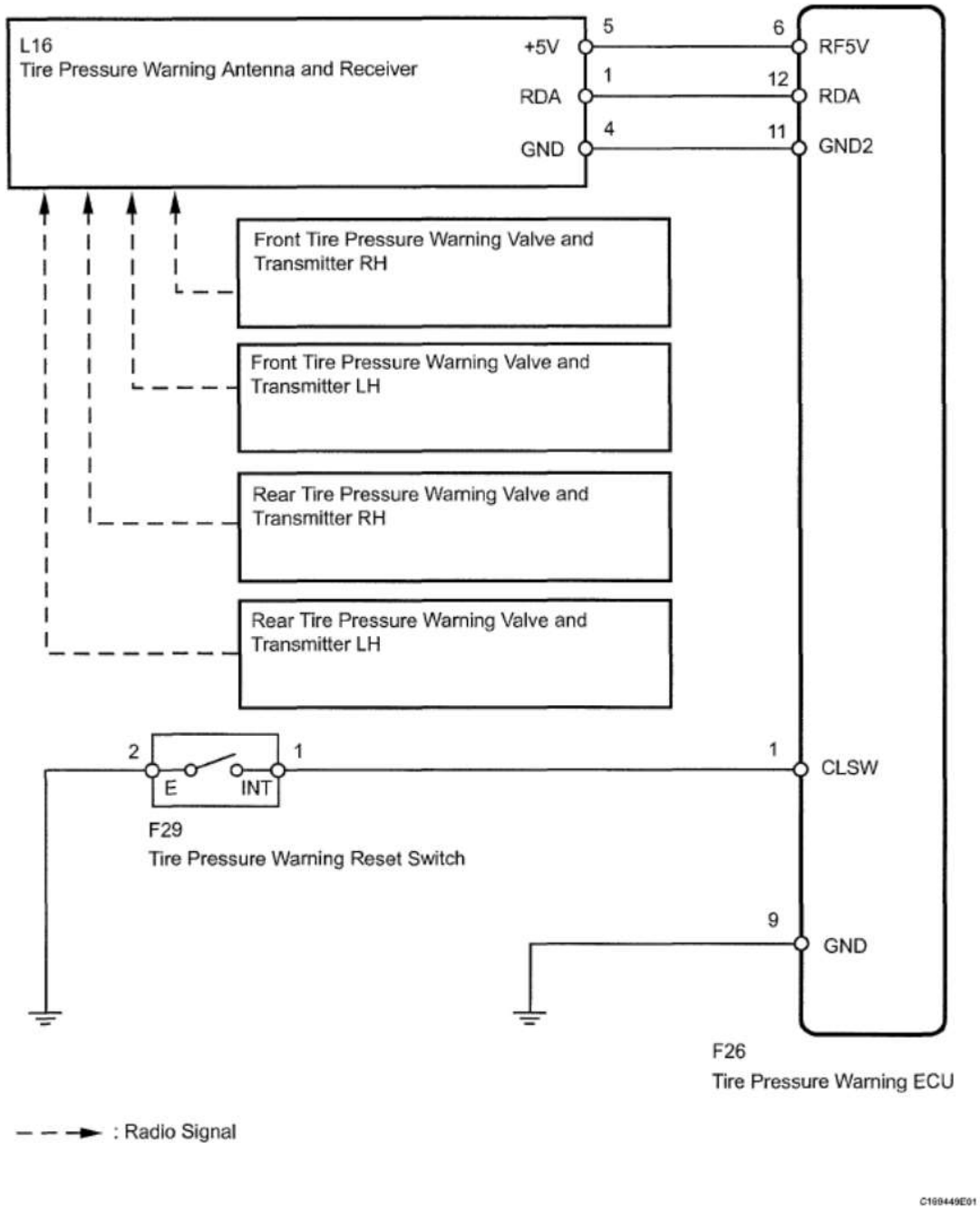


Fig. 30: Transmitter ID Not Received In Main Mode - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

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

1. **IDENTIFY TRANSMITTER NOT RECEIVED**
   a. Set the tire pressure to the appropriate specified values (See **PRECAUTION**).
   b. Turn the ignition switch off.
   c. Connect a Techstream to the DLC3.
   d. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data

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	kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)		has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: It may take about 2 or 3 minutes until the values are displayed.			

g. Rapidly reduce the tire pressure for each wheel 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 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 it.**
- **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 ID4) has changed, repeat this procedure one by one. Identify the transmitter not received.

Result

RESULT CHART

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

B : END

A: Go to next step

2. **CHECK TRANSMITTER ID**

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a. Turn the ignition switch off.
b. Connect a Techstream to the DLC3.
c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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.

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

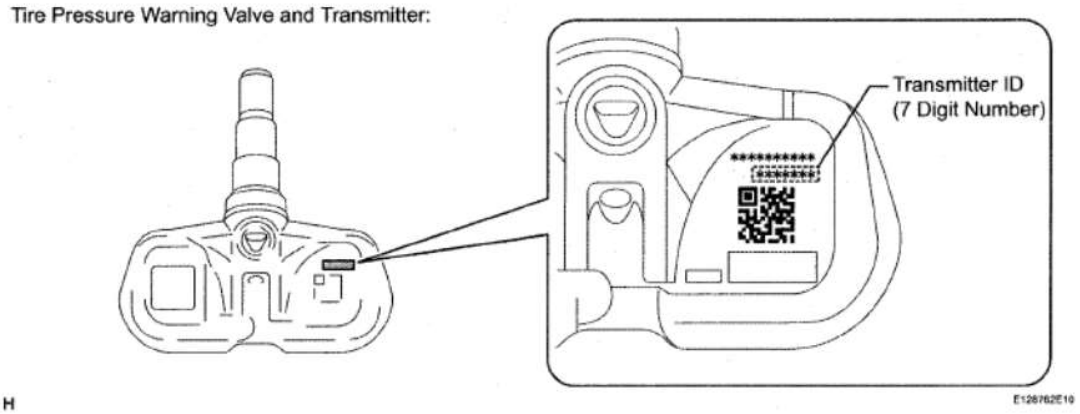


Fig. 31: Identifying 7 Digit Number (Transmitter ID)
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g. Confirm that the ID number on the transmitter and recorded transmitter ID match.

Result

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RESULT CHART

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 a Techstream to the DLC3.
   c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data

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	kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)		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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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 it.

Result

RESULT CHART

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 **REMOVAL**).
8. **CONFIRM TIRE INFLATION PRESSURE (DATA LIST)**
   a. Turn the ignition switch off.

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b. Connect a Techstream to the DLC3.
c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1 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 kgf/cm^2 , -14 psi) is

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	kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)		displayed for relative pressure, data has not been received.*
HINT: *: 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 it.

Result

RESULT CHART

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

DESCRIPTION

The tire pressure warning valves and transmitters that are installed in the tire and wheel assemblies measure the air pressure of the tires. 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 is output.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
C2141/41 C2142/42 C2143/43 C2144/44	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 537.5 kPa (-1 to 5.4 kgf/cm^2 , -14 psi to 78 psi), the temperature inside the tire is outside the specified range -40 to 120°C (-40 to 253°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

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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 IDs stored in the old ECU using a 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 after the ECU and/or valve and transmitter has been replaced.**

1. **IDENTIFY TRANSMITTER CORRESPONDING TO DTC**
   a. Set the tire pressure to the specified value (See **INSPECTION**).
   b. Turn the ignition switch off.
   c. Connect a Techstream to the DLC3.
   d. Turn the ignition switch to ON 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 at least 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds. If "ID Tire Inflation Pressure" data displayed on the tester (ID1 to ID4) 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 ID4) corresponds to which tire.

      Tire Pressure Monitor

      TIRE PRESSURE MONITOR CHART

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 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data

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	kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)		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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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 C2124/24 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**).			

h. Check the Data List.

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Result

RESULT CHART

Result	Detection Condition
One of "Tire Inflation Pressure" data (ID1 to ID4) changed.	Normal
"Tire Inflation Pressure" data did not change.	Transmitter corresponding to DTC

NOTE:

- **When "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 forcibly transmit the transmitter ID and recheck.**
- **Record the transmitter ID and position of transmitters that are normal.**

i. When the "ID Tire Inflation Pressure" data (ID1 to ID4) 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 ID4) has changed, identify the malfunctioning tire pressure warning valve and transmitter using recorded ID numbers and output DTC.

k. Set the tire pressures to the appropriate specified values (See **INSPECTION**).

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 valves and transmitters that are not replaced should be checked using the tester and recorded.

3. **REGISTRATION OF TRANSMITTER ID**

a. Register the transmitter ID 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 a Techstream to the DLC3.

c. Turn the ignition switch to ON 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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TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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

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appropriate specified value and rotate the tire 90 to 270°. Then rapidly release the tire pressure and recheck it.

Result

RESULT CHART

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

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 and outputs DTCs, and the tire pressure warning light blinks for 1 minute and then remains on.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
C2165/65 C2166/66 C2167/67 C2168/68	Temperature inside the tire exceeds 119°C (246.2°F) more than a specified amount of time.	• Tires • 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:

- **When replacing the tire pressure warning ECU, read the IDs stored in the old ECU using a 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 after the ECU and/or valve and transmitter has been**

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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 **PRECAUTION**).
   b. Turn the ignition switch off.
   c. Connect a Techstream to the DLC3.
   d. Turn the ignition switch to ON 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 at least 40 kPa (0.4 kgf/cm^2 , 5.8 psi) within 30 seconds.
   h. Check the Data List.

      Tire Pressure Monitor

      TIRE PRESSURE MONITOR CHART

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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4	Actual tire inflation pressure	If 0 kPa (0 kgf/cm^2 ,0 psi) is displayed for absolute pressure or-100 kPa (-1 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*

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	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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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 C2124/24 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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)**).		

Result

RESULT CHART

Result	Detection Condition

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One of "ID Tire Inflation Pressure" data (ID1 to ID4) 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 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 forcibly transmit the transmitter ID and recheck it.**
- **Record the transmitter ID and position of transmitters that are normal.**

i. When the "ID Tire Inflation Pressure" data (ID1 to ID4) 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 ID4) 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 valves and transmitters that are not replaced should be checked using the tester and recorded.

4. **CHECK REGISTRATION OF TRANSMITTER ID**

a. Register the transmitter ID for all wheels (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 a Techstream to the DLC3.

c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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

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pressure and recheck it.

Result

RESULT CHART

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 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 transmitter ID code is not registered in the ECU, a DTC is output.

DTC DETECTION CONDITION CHART

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 IDs stored in the old ECU using a 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 after the ECU has been replaced.**

1. **CONFIRM REGISTRATION CONDITION (REGISTERED ID CODES)**
   a. Turn the ignition switch off.
   b. Connect a Techstream to the DLC3.
   c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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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.

OK:

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

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 a Techstream to the DLC3.
   c. Turn the ignition switch to ON 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

TIRE PRESSURE MONITOR CHART

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 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data

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	kPa (6.5 kgf/cm^2 , 92 psi), Relative pressure / 537.5 kPa (5.4 kgf/cm^2 , 78 psi)		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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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 it.

Result

RESULT CHART

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

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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 C2124/24 (No Signal from Transmitter in Main Mode) and DTC C2177/77 (Initialization not Completed).

DTC DETECTION CONDITION CHART

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 C2124/24 are being set.

WIRING DIAGRAM

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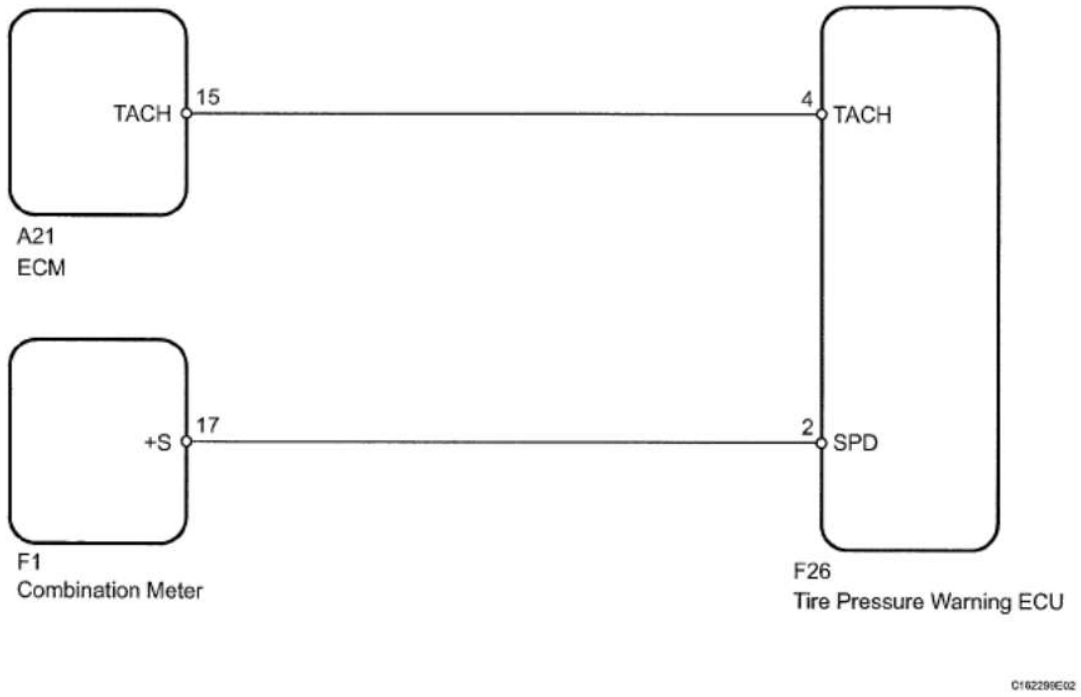


Fig. 32: Vehicle Speed Or Engine Speed Signal Malfunction - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the IDs stored in the old ECU using a 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 after 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 10 seconds to erase DTC C2191/91 and C2194/94.
   c. Check the test mode DTCs.

   Result

   RESULT CHART

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

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HINT:

DTCs C2181/81 to C2184/84 (Transmitter ID not Received) are output at this time, but they are not related to this check.

B: Go to **DTC C2191/91**

C: Go to **DTC C2194/94**

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 CHART

DTC No.	DTC Detection Condition	Trouble Area
C2176/76	Malfunction in the tire pressure warning ECU internal circuit.	• Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU

WIRING DIAGRAM

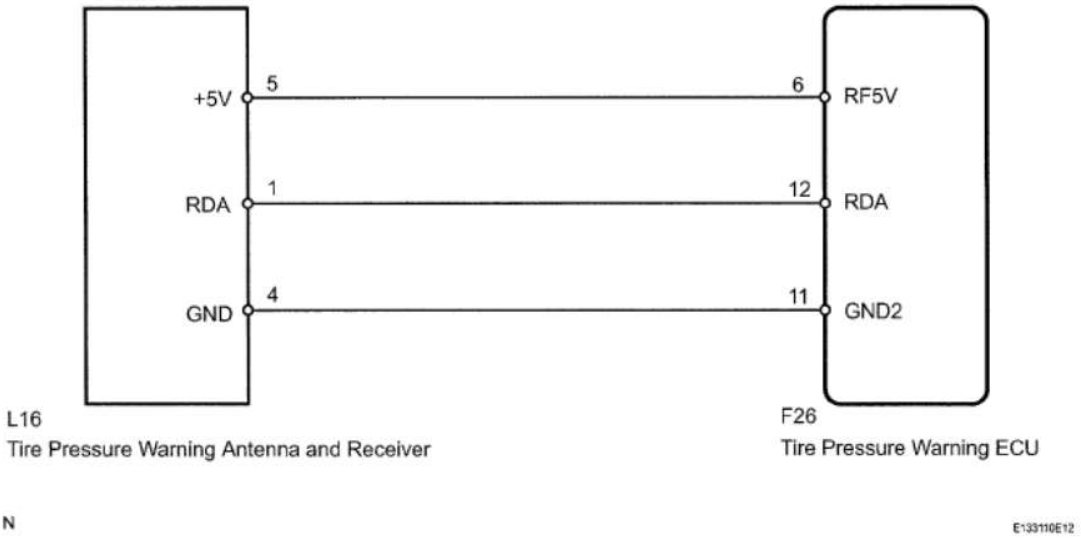


Fig. 33: Receiver Error - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the IDs stored in the old ECU using a 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 after the ECU has been replaced.**

1. **CHECK HARNESS AND CONNECTOR (ECU - RECEIVER)**
   a. Disconnect the F26 ECU connector.
   b. Disconnect the L16 receiver connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
F26-12 (RDA) - L16-1 (RDA)	Always	Below 1 ohms
F26-11 (GND2) - L16-4 (GND)	Always	Below 1 ohms
F26-6 (RF5V) - L16-5 (+5V)	Always	Below 1 ohms
F26-12 (RDA) or L16-1 (RDA) - Body ground	Always	10 kohms or higher
F26-11 (GND2) or L16-4 (GND) - Body ground	Always	10 kohms or higher
F26-6 (RF5V) or L16-5 (+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)

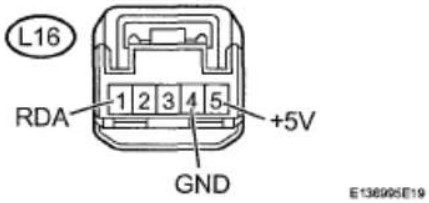


Fig. 34: Checking Harness And Connector (ECU - Receiver)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **CHECK TIRE PRESSURE WARNING ECU**
   a. Turn the ignition switch to ON.
   b. Measure the voltage according to the value(s) in the table below.

Standard voltage

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Switch Condition	Specified Condition
F26-6 (RF5V) - F26-11 (GND2)	Ignition switch ON	4.5 to 5.5 V

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

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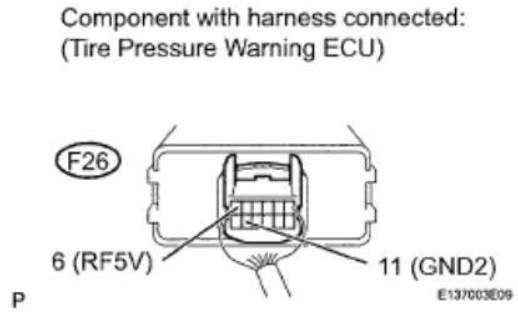


Fig. 35: Checking Tire Pressure Warning ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

DTC C2177/77 INITIALIZATION NOT COMPLETED

DESCRIPTION

Initialization is necessary if one of the following occurs: 1) the ECU is replaced; 2) the tire pressure warning valve and transmitter is replaced; 3) tires with a different tire standard pressure are installed; 4) the tires are rotated; or 5) a new vehicle is delivered.

DTC DETECTION CONDITION CHART

DTC No.	DTC Detection Condition	Trouble Area
C2177/77	When 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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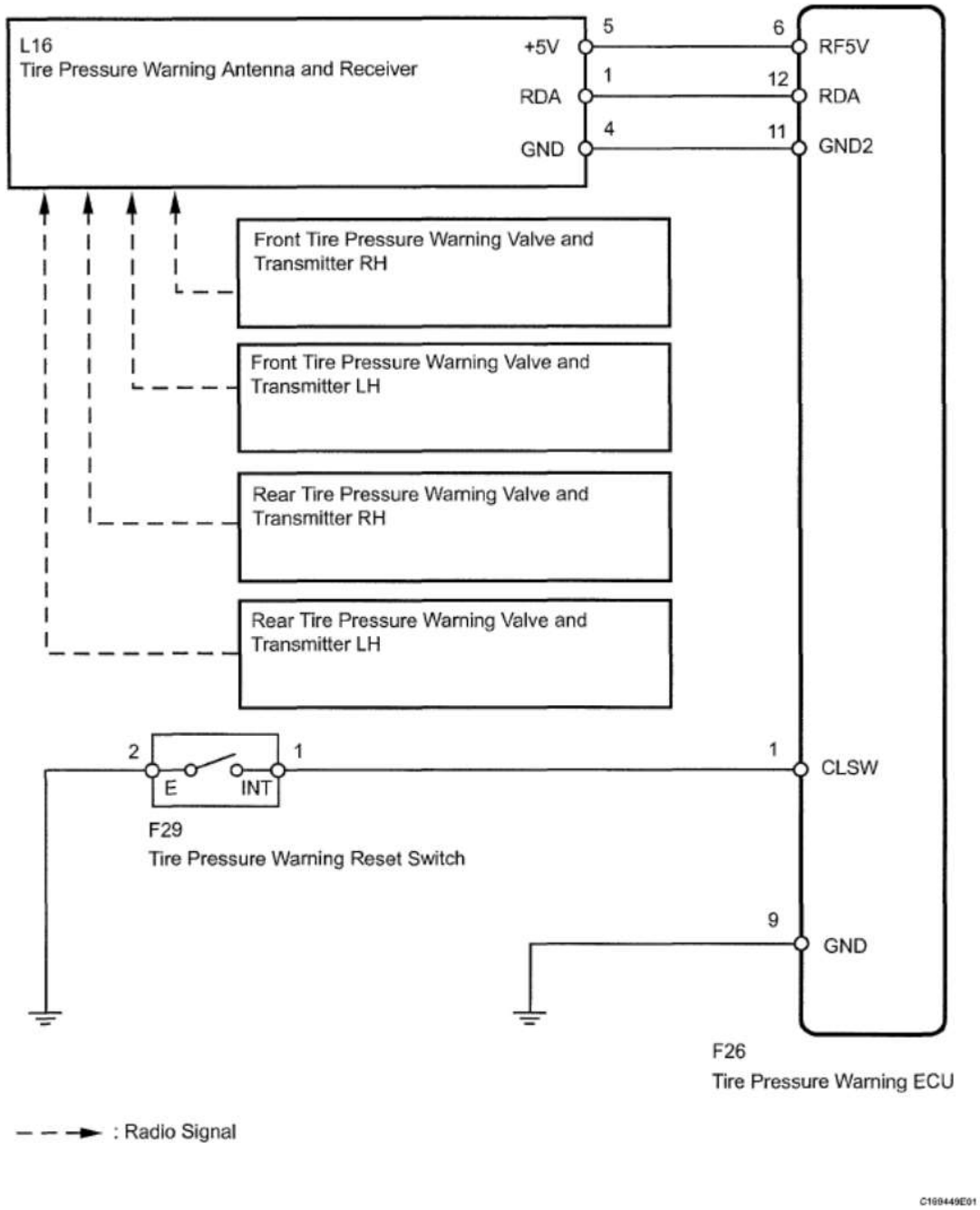


Fig. 36: Initialization Not Completed - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

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

1. **CHECK FREQUENCY RECEIVING CONDITION**
   a. Check if the vehicle is located in areas such as the ones 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 areas described above, the tire pressure warning light may turn on only in a particular area.

      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 frequency may be interrupted due to 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 a Techstream to the DLC3.
   c. Turn the ignition switch to ON 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

   TIRE PRESSURE MONITOR CHART

Tester	Measurement Item/Range	Normal	Diagnostic Note

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Display		Condition	
ID1 Tire Inflation Pressure	ID1 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure /-100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 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 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 0 kPa (0 kgf/cm^2 , 0 psi), Relative pressure / -100 kPa (-1 kgf/cm^2 , -14 psi) max.: Absolute pressure / 637.5 kPa (6.5 kgf/cm^2 , 92 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 kgf/cm^2 , -14 psi) is displayed for relative pressure, data has not been received.*
HINT: *: 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 it.

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Result

RESULT CHART

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 DTC C2121/21 TO C2124/24 (See **DTC C2121/21 NO SIGNAL FROM TRANSMITTER ID1 IN MAIN MODE; DTC C2122/22 NO SIGNAL FROM TRANSMITTER ID2 IN MAIN MODE; DTC C2123/23 NO SIGNAL FROM TRANSMITTER ID3 IN MAIN MODE; DTC C2124/24 NO SIGNAL FROM TRANSMITTER ID4 IN MAIN MODE; 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 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.

DTC DETECTION CONDITION CHART

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

WIRING DIAGRAM

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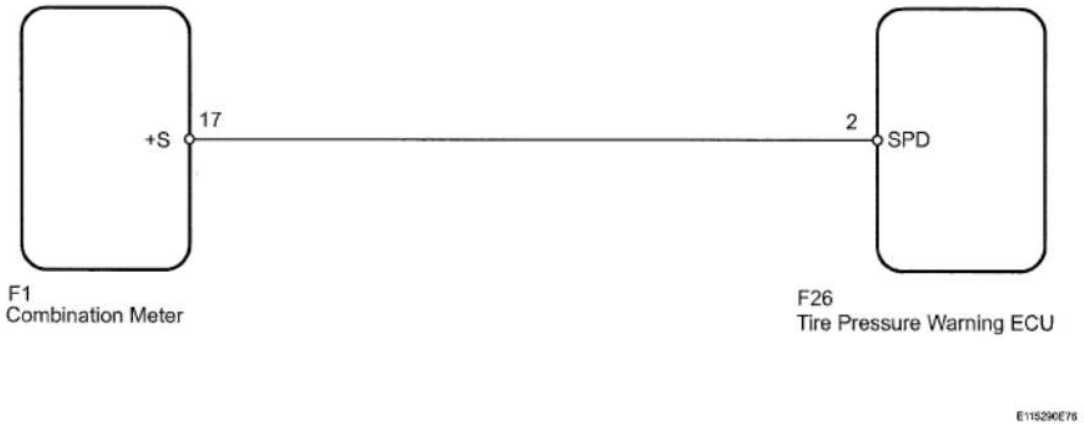


Fig. 37: Vehicle Speed Signal Error (Test Mode DTC) - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using a 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 after the ECU has been replaced.**

1. **READ VALUE USING TECHSTREAM (VEHICLE SPEED)**
   a. Turn the ignition switch off.
   b. Connect a Techstream to the DLC3.
   c. Turn the ignition switch to ON and 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

TIRE PRESSURE MONITOR CHART

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
Vehicle Speed	Vehicle speed/ min.: 0 km/h (0 mph) 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.

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NG: Go to step 2

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

2. **INSPECT TIRE PRESSURE WARNING ECU (SPD SIGNAL)**
   a. Disconnect the F26 ECU connector.
   b. Jack up the vehicle.
   c. Move the shift lever to N.
   d. Turn the ignition switch to ON.
   e. Check the waveform of the ECU connector using an oscilloscope, while turning the wheel slowly.

OK

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Switch Condition	Specified Condition
F26-2 (SPD) - F26-9 (GND)	Ignition switch ON	Correct waveform is as shown

Tool Setting

TOOL SETTING CHART

Item	Contents
Tool Setting	2 V/DIV, 20 ms/DIV.
Vehicle Condition	Rotate driving wheel slowly

HINT:

- The wavelength becomes shorter as the vehicle speed increases.
- Depending on the vehicle, the output waveform voltage may rise to 12 V if influenced by optionally installed systems.

NG: Go to step 3

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

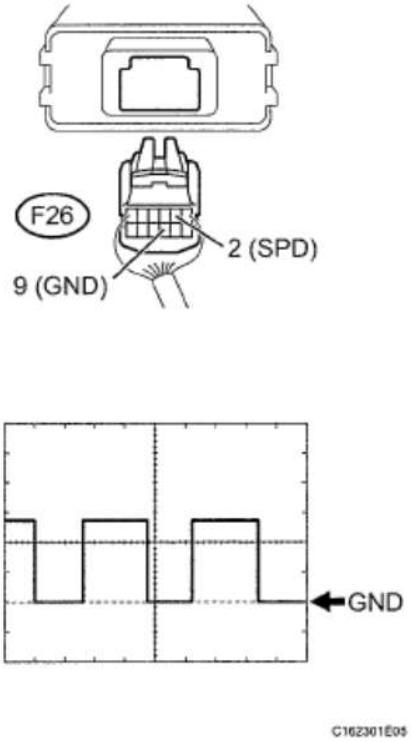


Fig. 38: Disconnecting F26 ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

3. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - COMBINATION METER)**
   a. Disconnect the F26 ECU connector.
   b. Disconnect the F1 meter connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

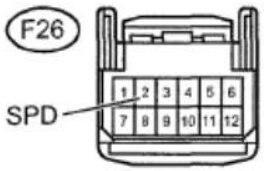
Tester Connection	Condition	Specified Condition
F26-2 (SPD) - F1-17 (+S)	Always	Below 1 ohms
F26-2 (SPD) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

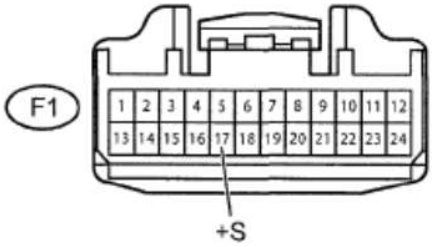
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Front view of wire harness connector:
(to Tire Pressure Warning ECU)



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



C162254E03

Fig. 39: Checking Harness And Connector (Tire Pressure Warning ECU - Combination Meter)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE COMBINATION METER (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 or more is detected for 3 seconds or more. This DTC is output only in test mode.

DTC DETECTION CONDITION CHART

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

WIRING DIAGRAM

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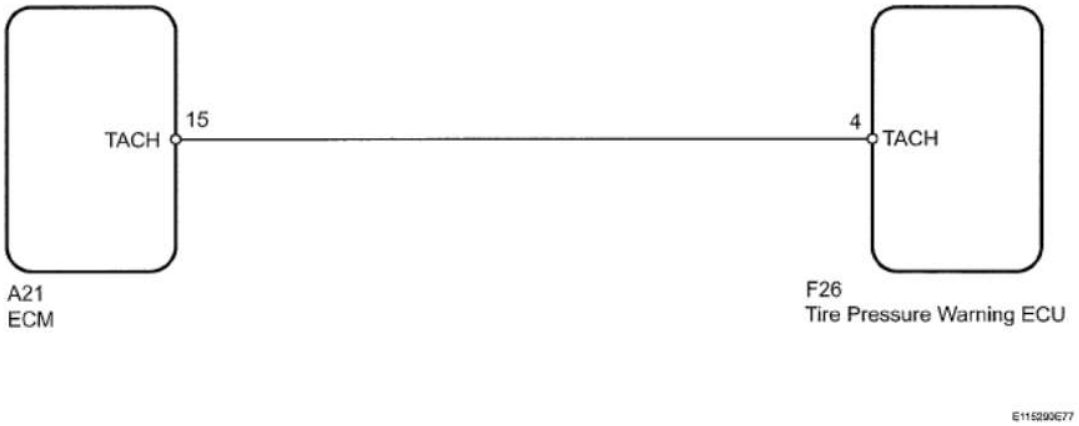


Fig. 40: Engine Speed Signal Error (Test Mode DTC) - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using a 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 after the ECU has been replaced.**

1. **READ VALUE USING TECHSTREAM (ENGINE SPEED)**
   a. Turn the ignition switch off.
   b. Connect a Techstream to the DLC3.
   c. Turn the ignition switch ON and 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

TIRE PRESSURE MONITOR CHART

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.

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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 F26 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 CHART

Tester Connection	Condition	Specified Condition
F26-4 (TACH) - F26-9 (GND)	Idling	Correct waveform is as shown

Tool Setting

TOOL SETTING CHART

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

HINT:

The wavelength becomes shorter as the engine speed increases.

NG: Go to step 3

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

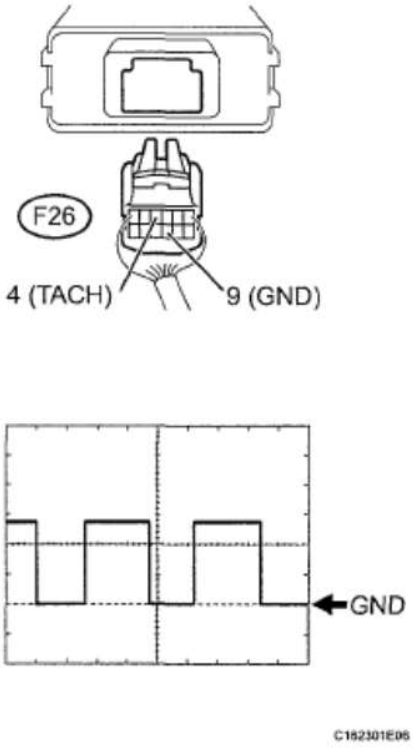


Fig. 41: Disconnecting F26 ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

3. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - ECM)**
   a. Disconnect the F26 ECU connector.
   b. Disconnect the A21 ECM connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
F26-4 (TACH) - A21-15 (TACH)	Always	Below 1 ohms
F26-4 (TACH) - 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 ECM)

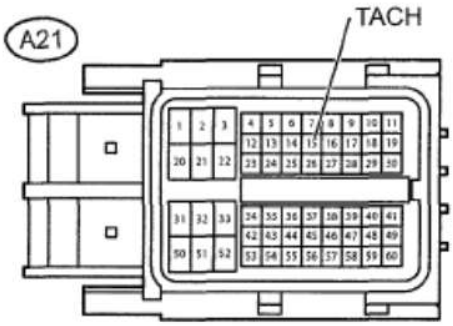


Fig. 42: Checking Harness And Connector (Tire Pressure Warning ECU - ECM)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE ECM (See **REMOVAL**)

TIRE PRESSURE WARNING RESET SWITCH CIRCUIT

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

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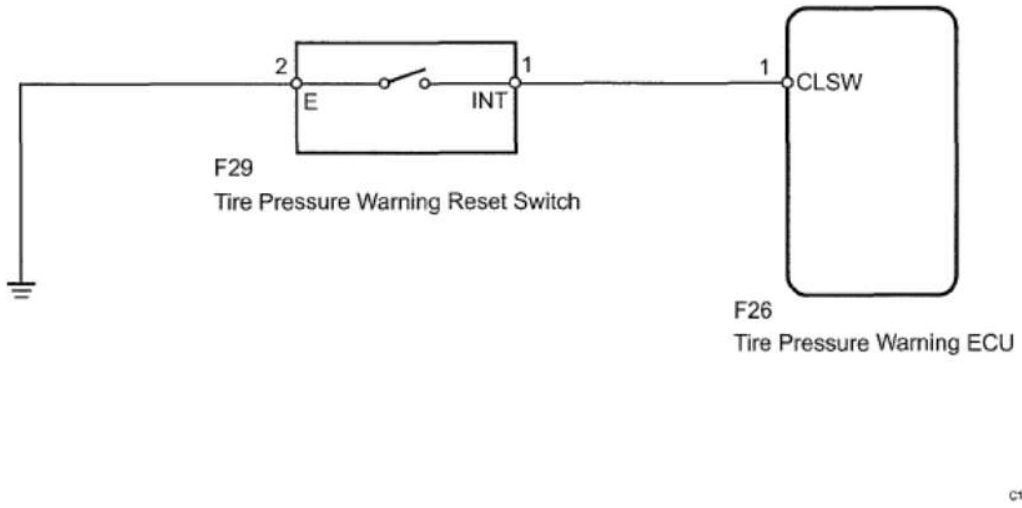


Fig. 43: Tire Pressure Warning Reset Switch Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the IDs stored in the old ECU using a 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, after 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.

   Reset switch OFF:

   Tire pressure warning light blinks.

   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**

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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

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Switch Condition	Specified Condition
1 - 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)

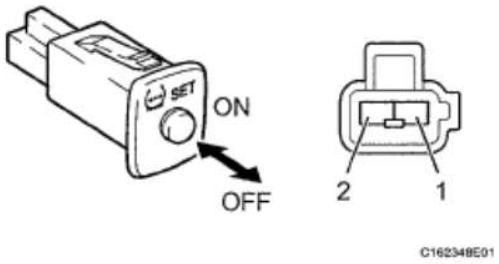


Fig. 44: Inspecting Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (RESET SWITCH - ECU AND BODY GROUND)**
   a. Disconnect the F29 reset switch connector.
   b. Disconnect the F26 ECU connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

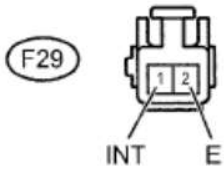
Tester Connection	Condition	Specified Condition
F26-1 (CLSW) - F29-1 (INT)	Always	Below 1 ohms
F26-1 (CLSW) - Body ground	Always	10 kohms or higher
F29-2 (E) - Body ground	Always	Below 1 ohms

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NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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



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

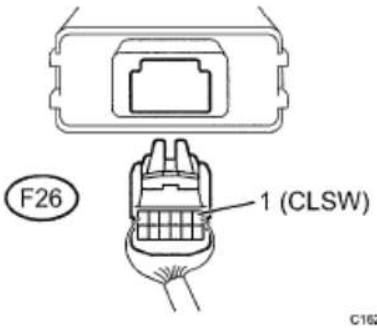


Fig. 45: Checking Harness And Connector (Reset Switch - ECU And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TIRE PRESSURE WARNING LIGHT CIRCUIT

DESCRIPTION

If the tire pressure warning ECU detects a disconnected connector or an open circuit between the tire pressure warning ECU and combination meter, the tire pressure warning light turns off 10 seconds after the ignition switch is turned ON, blinks for 1 minute, and then remains on.

WIRING DIAGRAM

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Fig. 46: Tire Pressure Warning Light Circuit - Wiring Diagram
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INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using a 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 after the ECU has been replaced.**

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

Combination Meter

COMBINATION METER CHART

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire Pressure Warning System	Tire Pressure Warning Light illuminates	ON or OFF	-

OK:

The warning light turns on when operating the tester.

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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 F26 ECU connector.
   b. Disconnect the F2 meter connector.
   c. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
F26-5 (IND) - F2-1 (TIRE)	Always	Below 1 ohms
F26-5 (IND) - Body ground	Always	10 kohms or higher

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

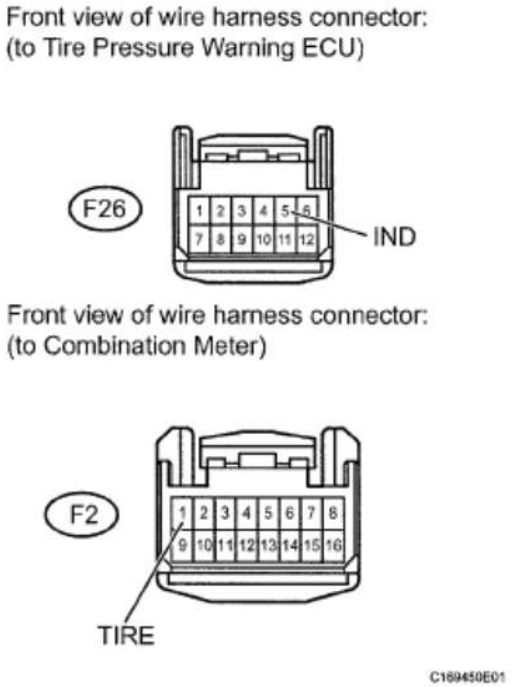


Fig. 47: Checking Harness And Connector (Combination Meter - ECU And Body Ground)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

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ECU POWER SOURCE CIRCUIT

DESCRIPTION

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

WIRING DIAGRAM

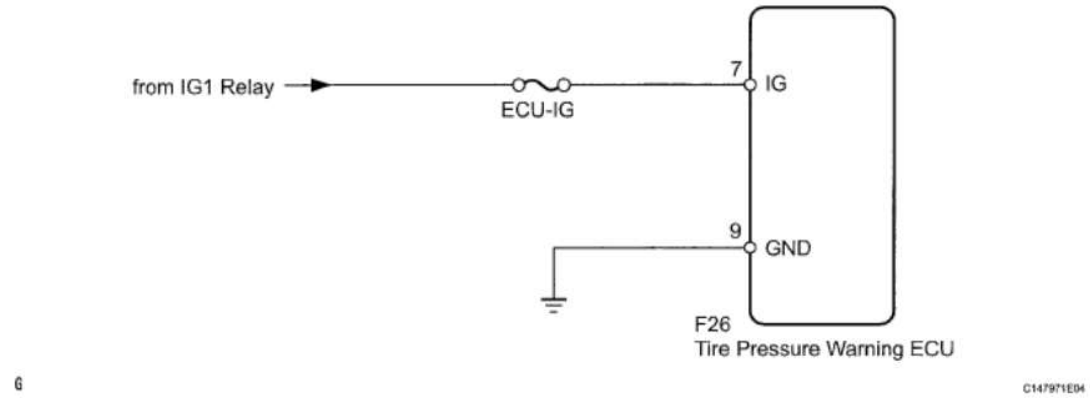


Fig. 48: ECU Power Source Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

- **When replacing the tire pressure warning ECU, read the IDs stored in the old ECU using a 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 after the ECU has been replaced.**

1. **INSPECT FUSE (ECU-IG)**
   a. Remove the ECU-IG fuse from the main body ECU.
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
ECU-IG	Always	Below 1 ohms

NG: Go to step 4

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Main Body ECU:

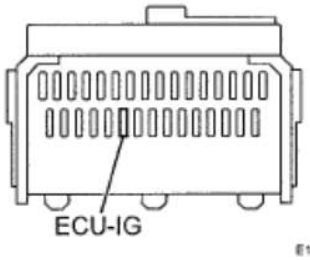


Fig. 49: Identifying ECU-IG Fuse
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - BATTERY)**
   a. Disconnect the F26 ECU connector.
   b. Measure the voltage according to the value(s) in the table below.

Standard voltage

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Switch Condition	Specified Condition
F26-7 (IG) - Body ground	Ignition switch ON	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. 50: Identifying F26 ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK: Go to next step

3. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - BODY GROUND)**
   a. Disconnect the F26 ECU connector.

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b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
F26-9 (GND) - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR

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



Fig. 51: Identifying F26 ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

4. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - FUSE)**
   a. Disconnect the F26 ECU connector.
   b. Measure the resistance according to the value(s) in the table below.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Switch Condition	Specified Condition
F26-7 (IG) - Body ground	Ignition switch OFF	10 kohms or higher

NG: REPLACE FUSE AND REPAIR OR REPLACE HARNESS OR CONNECTOR

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

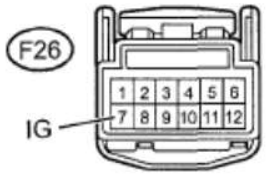


Fig. 52: Identifying F26 ECU Connector
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

OK : REPLACE FUSE

TC AND CG TERMINAL CIRCUIT

DESCRIPTION

DTC output mode is set by connecting terminals TC and CG of the DLC3. The DTCs are indicated by the blinking of the tire pressure warning light.

WIRING DIAGRAM

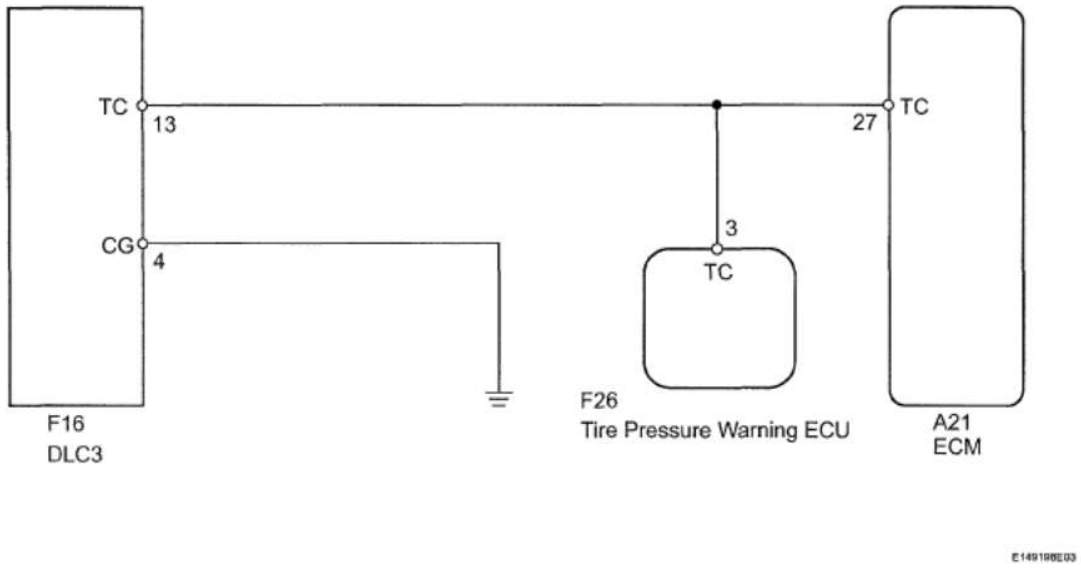


Fig. 53: TC And CG Terminal Circuit - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

When each warning light continues blinking, a ground short in the wiring of terminal TC of the DLC3 or an

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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 a 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 after the ECU has been replaced.**

1. **CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING ECU - DLC3)**
   a. Disconnect the F26 ECU connector.
   b. Measure the resistance according to the value(s) in the table below.

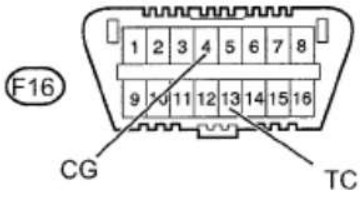
Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

Tester Connection	Condition	Specified Condition
F26-3 (TC) - F16-13 (TC)	Always	Below 1 ohms
F26-3 (TC) - Body ground	Always	10 kohms or higher
F16-4 (CG) - Body ground	Always	Below 1 ohms

NG: REPAIR OR REPLACE HARNESS OR CONNECTOR OR EACH ECU

Front view of DLC3:



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



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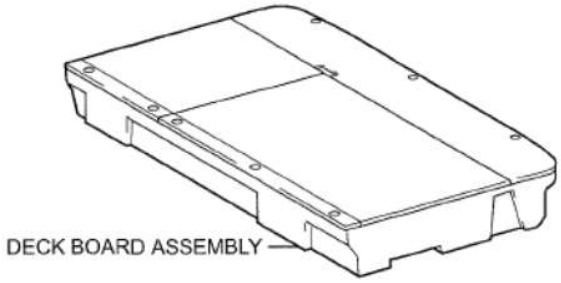
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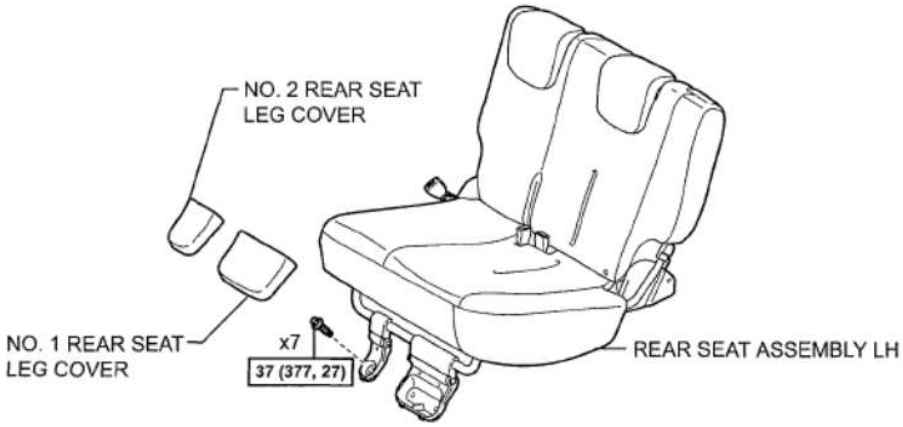
Fig. 54: Checking Harness And Connector (Tire Pressure Warning ECU - DLC3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

TIRE PRESSURE WARNING RECEIVER (W/ ANTENNA)

COMPONENTS





N*m (kgf*cm, ft*lbf) : Specified torque

P C168845E01

Fig. 55: Identifying Tire Pressure Warning Receiver (W/ Antenna) Components And Torque Specifications (1 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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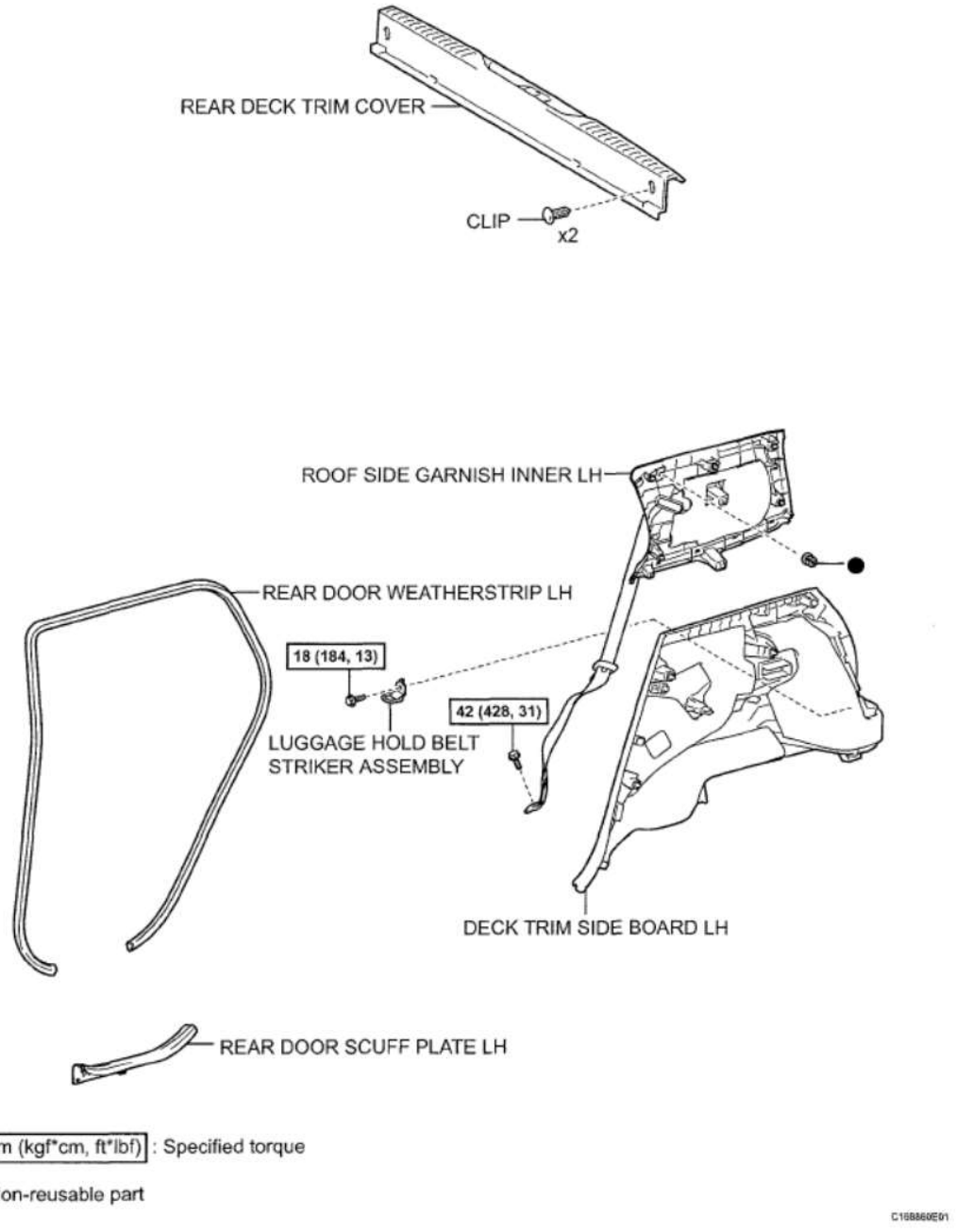


Fig. 56: Identifying Tire Pressure Warning Receiver (W/ Antenna) Components And Torque Specifications (2 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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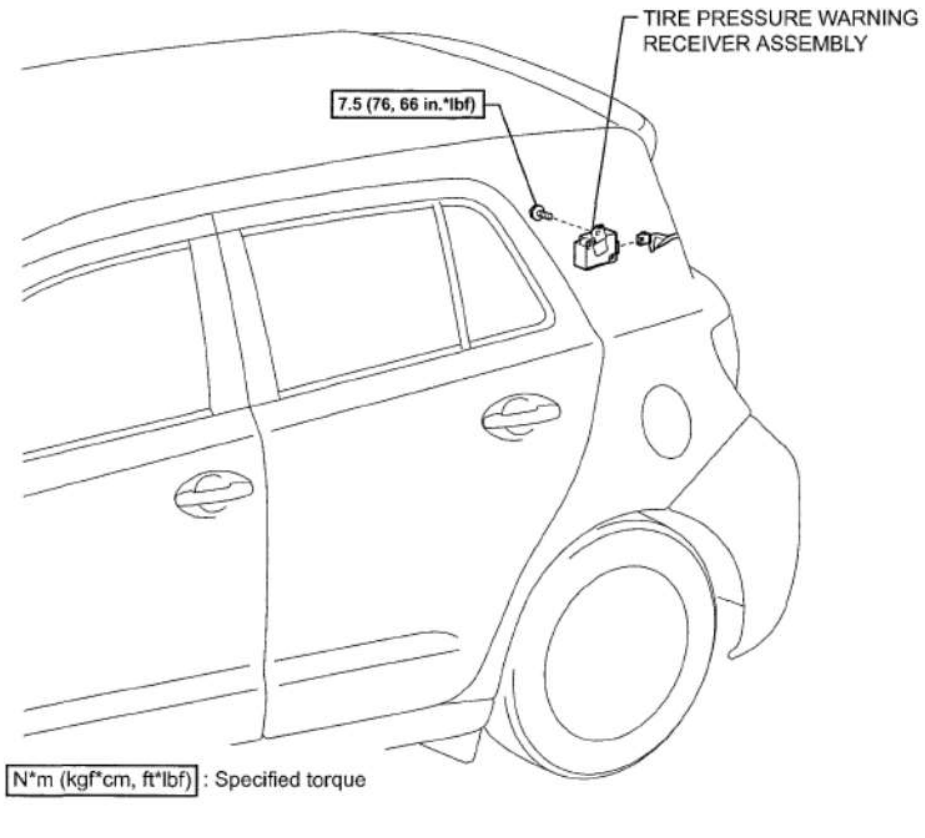


Fig. 57: Identifying Tire Pressure Warning Receiver (W/ Antenna) Components And Torque Specifications (3 Of 3)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE NO. 2 REAR SEAT LEG COVER** (See **REMOVAL**)
2. **REMOVE NO. 1 REAR SEAT LEG COVER** (See **REMOVAL**)
3. **REMOVE REAR SEAT ASSEMBLY LH** (See **REMOVAL**)
4. **REMOVE DECK BOARD ASSEMBLY** (See **REMOVAL**)
5. **REMOVE REAR DECK TRIM COVER** (See **REMOVAL**)
6. **REMOVE REAR DOOR SCUFF PLATE LH** (See **REMOVAL**)
7. **REMOVE REAR DOOR WEATHERSTRIP LH** (See **REMOVAL**)
8. **REMOVE LUGGAGE HOLD BELT STRIKER ASSEMBLY** (See **REMOVAL**)
9. **REMOVE DECK TRIM SIDE BOARD LH** (See **REMOVAL**)
10. **REMOVE ROOF SIDE GARNISH INNER LH** (See **REMOVAL**)
11. **REMOVE TIRE PRESSURE WARNING RECEIVER ASSEMBLY (w/ Antenna)**
    a. Disconnect the tire pressure warning receiver connector.

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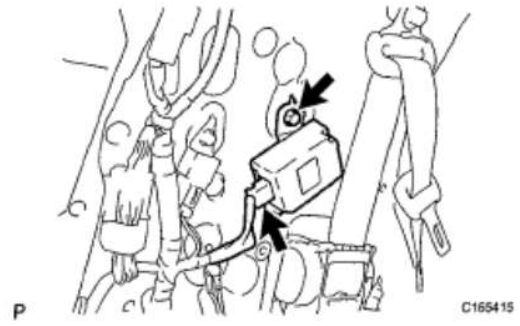


Fig. 58: Locating Bolt And Tire Pressure Warning Receiver
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Remove the bolt and remove the tire pressure warning receiver.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING RECEIVER ASSEMBLY (w/ Antenna)**
   a. Install the tire pressure warning receiver with the bolt.

      Torque: 7.5 N*m (76 kgf*cm, 66 in.*lbf)

   b. Connect the pressure warning receiver connector.

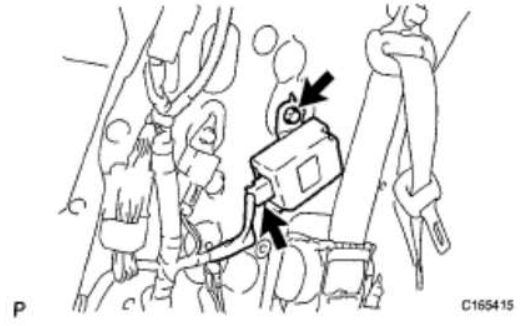


Fig. 59: Locating Bolt And Tire Pressure Warning Receiver
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

2. **INSTALL ROOF SIDE GARNISH INNER LH** (See **INSTALLATION**)
3. **INSTALL DECK TRIM SIDE BOARD LH** (See **INSTALLATION**)
4. **INSTALL LUGGAGE HOLD BELT STRIKER ASSEMBLY** (See **INSTALLATION**)
5. **INSTALL REAR DOOR WEATHERSTRIP LH** (See **INSTALLATION**)
6. **INSTALL REAR DOOR SCUFF PLATE LH** (See **INSTALLATION**)
7. **INSTALL REAR DECK TRIM COVER** (See **INSTALLATION**)
8. **INSTALL DECK BOARD ASSEMBLY** (See **INSTALLATION**)

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9. **INSTALL REAR SEAT ASSEMBLY LH** (See **INSTALLATION**)
10. **INSTALL NO. 1 REAR SEAT LEG COVER** (See **INSTALLATION**)
11. **INSTALL NO. 2 REAR SEAT LEG COVER** (See **INSTALLATION**)
12. **INSPECT TIRE PRESSURE WARNING SYSTEM**

    (See **TEST MODE PROCEDURE**)

TIRE PRESSURE WARNING VALVE AND TRANSMITTER

COMPONENTS

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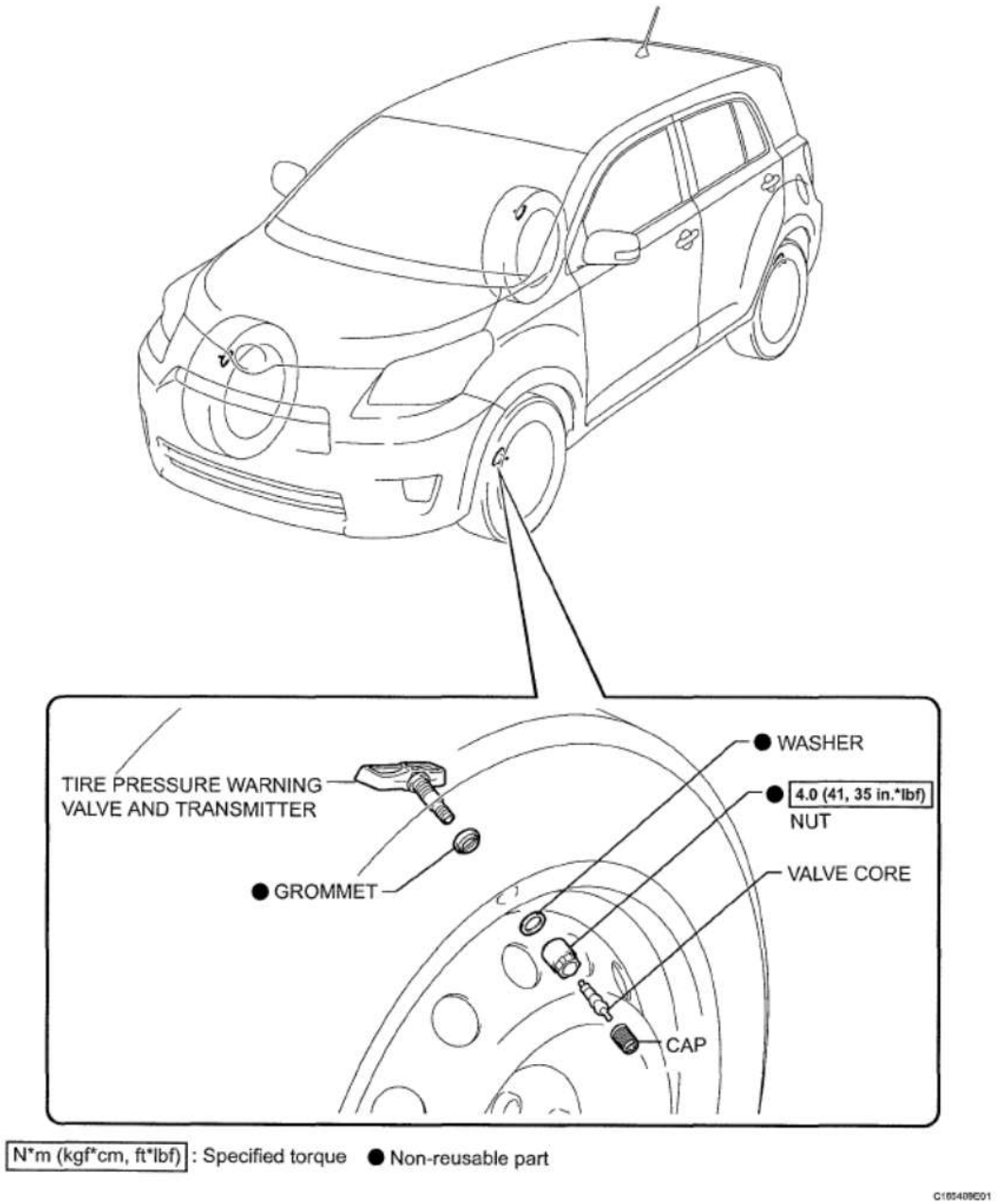


Fig. 60: Identifying Tire Pressure Warning Valve And Transmitter Components And Torque Specifications
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE FRONT WHEEL**
2. **REMOVE REAR WHEEL**
3. **REMOVE TIRE PRESSURE WARNING VALVE AND TRANSMITTER**

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a. Remove the valve core and cap, and release the air from the tire.

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 and valve core.

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

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

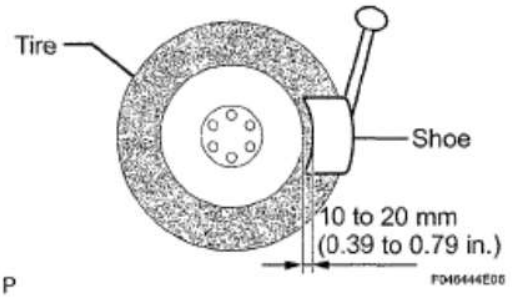


Fig. 61: Identifying Tire And Shoe
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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.

HINT:

Replace the grommet even if any damage is not found on it.

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 abnormalities on the tire pressure warning valve and transmitter.**

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- **Check that there is no foreign matter on the 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).**

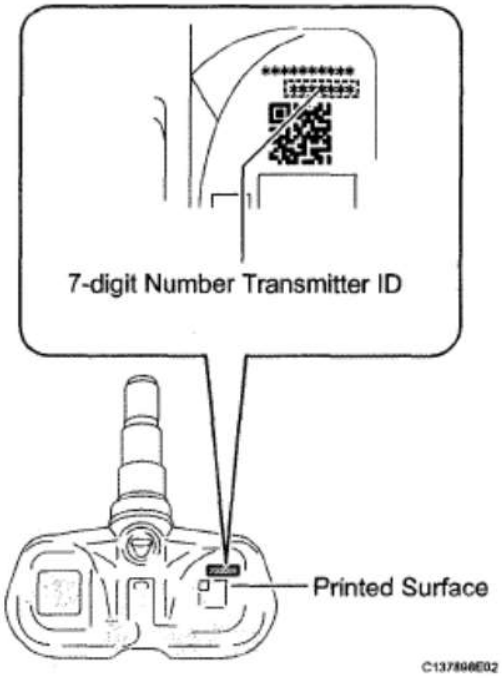


Fig. 62: Identifying 7 Digit Number (Transmitter ID)
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

b. Install a new washer on the tire pressure warning valve and transmitter from the rim side and tighten a new 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.**
- **Replace the grommet even if not damaged when removing the tire pressure warning valve and transmitter.**
- **Check that there is no oil, water, or lubricant around the rim**

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hole, tire pressure warning valve and transmitter, washer, and nut. Failing to do so may result in improper installation.

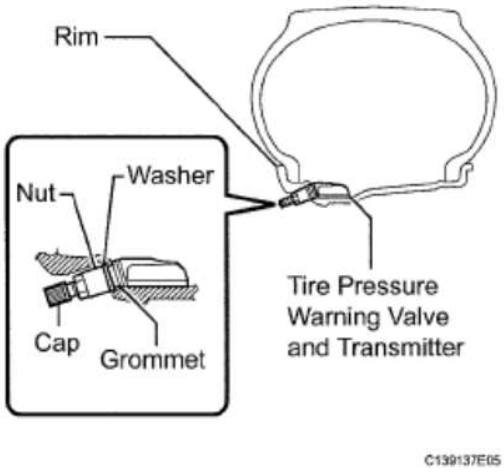


Fig. 63: Identifying Tire Pressure Warning Valve And Transmitter
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. Set the wheel disc into 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 interfere 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.**

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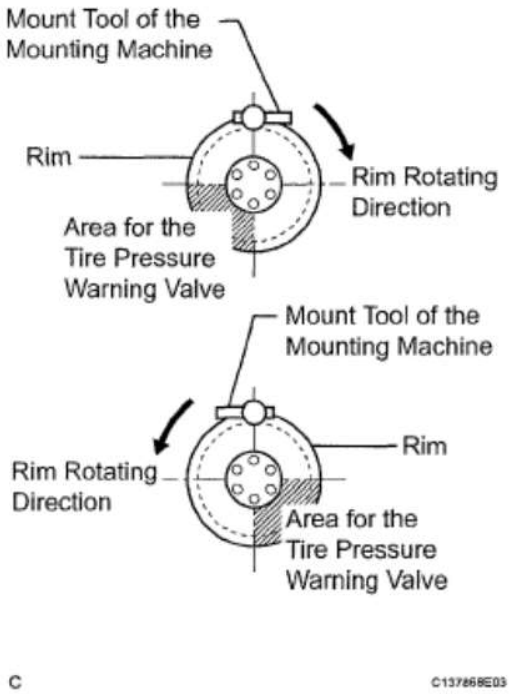


Fig. 64: Identifying Rim Rotating Direction
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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.

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: Do not tighten the nut further after tightening it 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)

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4. **INSPECT TIRES**

   (See **INSPECTION**)

5. **REGISTER TRANSMITTER ID**

   (See **REGISTRATION**)

6. **INSPECT TIRE PRESSURE WARNING SYSTEM**

   (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.

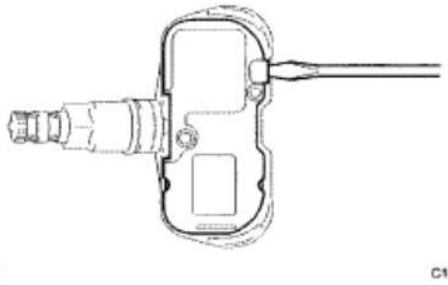


Fig. 65: Prying Off Back Cover
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the battery and cut the 2 terminals which connect the battery and base board.

      HINT:

      The battery and base board covered with silicone resin are exposed.

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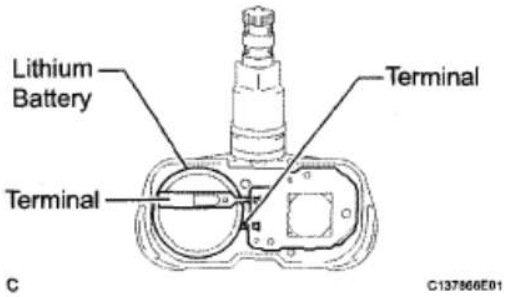


Fig. 66: Identifying Lithium Battery And Terminal
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TIRE PRESSURE WARNING ECU

COMPONENTS

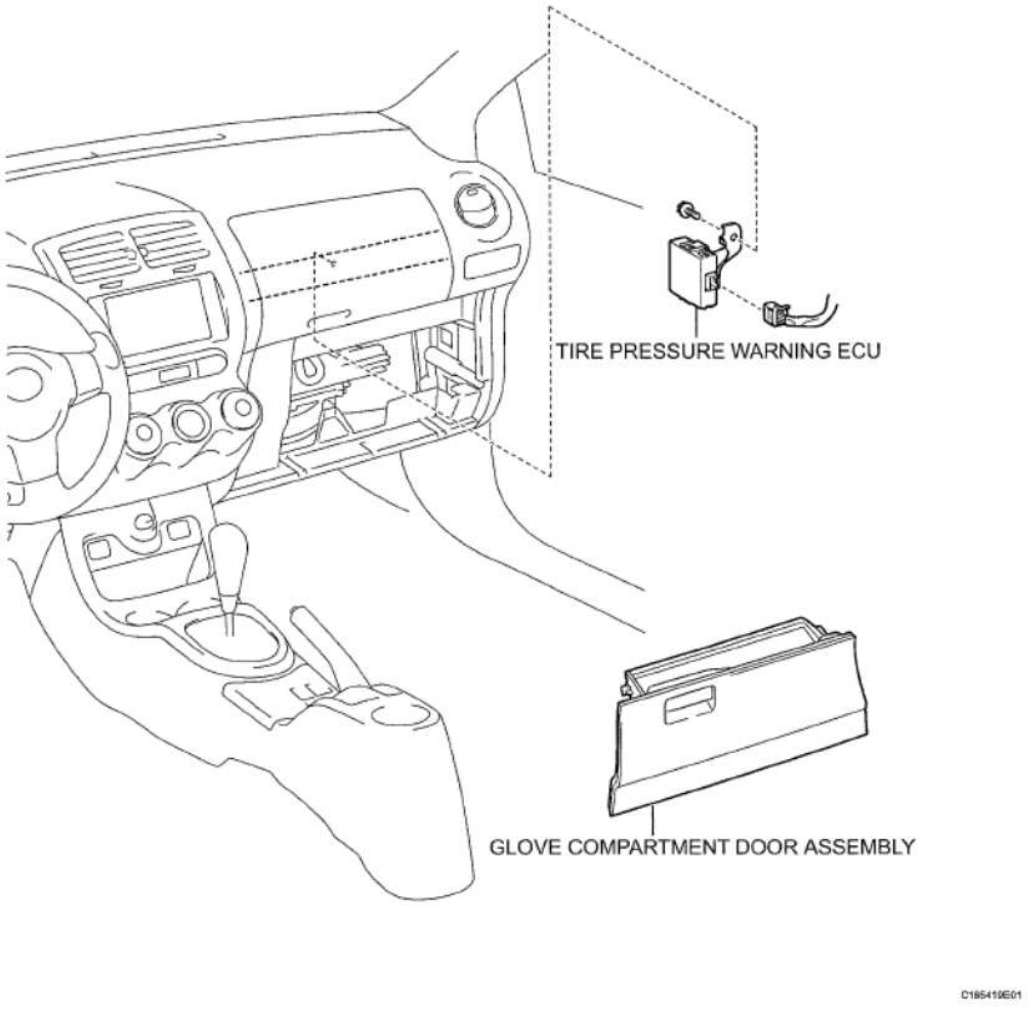


Fig. 67: Identifying Tire Pressure Warning ECU Components

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REMOVAL

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

1. **REMOVE GLOVE COMPARTMENT DOOR ASSEMBLY** (See **REMOVAL**)
2. **REMOVE TIRE PRESSURE WARNING ECU**
   a. Disconnect the tire pressure warning ECU connector.

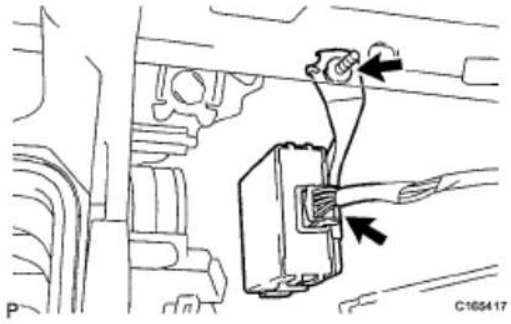


Fig. 68: Locating Screw And Tire Pressure Warning ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

   b. Remove the screw and remove the tire pressure warning ECU.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING ECU**
   a. Install the tire pressure warning ECU with the screw.

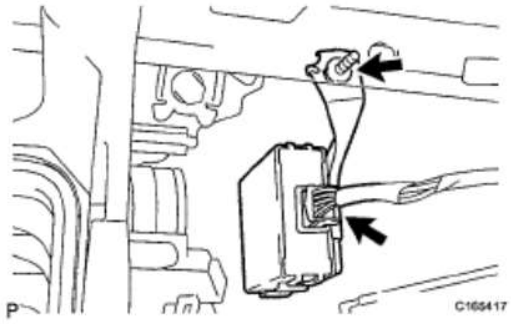


Fig. 69: Locating Screw And Tire Pressure Warning ECU
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b. Connect the tire pressure warning ECU connector.

2. **INSTALL GLOVE COMPARTMENT DOOR ASSEMBLY** (See **INSTALLATION**)
3. **REGISTER TRANSMITTER ID**

   (See **REGISTRATION**)

4. **INSPECT TIRE PRESSURE WARNING SYSTEM**

   (See **TEST MODE PROCEDURE**)

5. **INITIALIZE SYSTEM**

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

   (See **INITIALIZATION**)

TIRE PRESSURE WARNING RESET SWITCH

COMPONENTS

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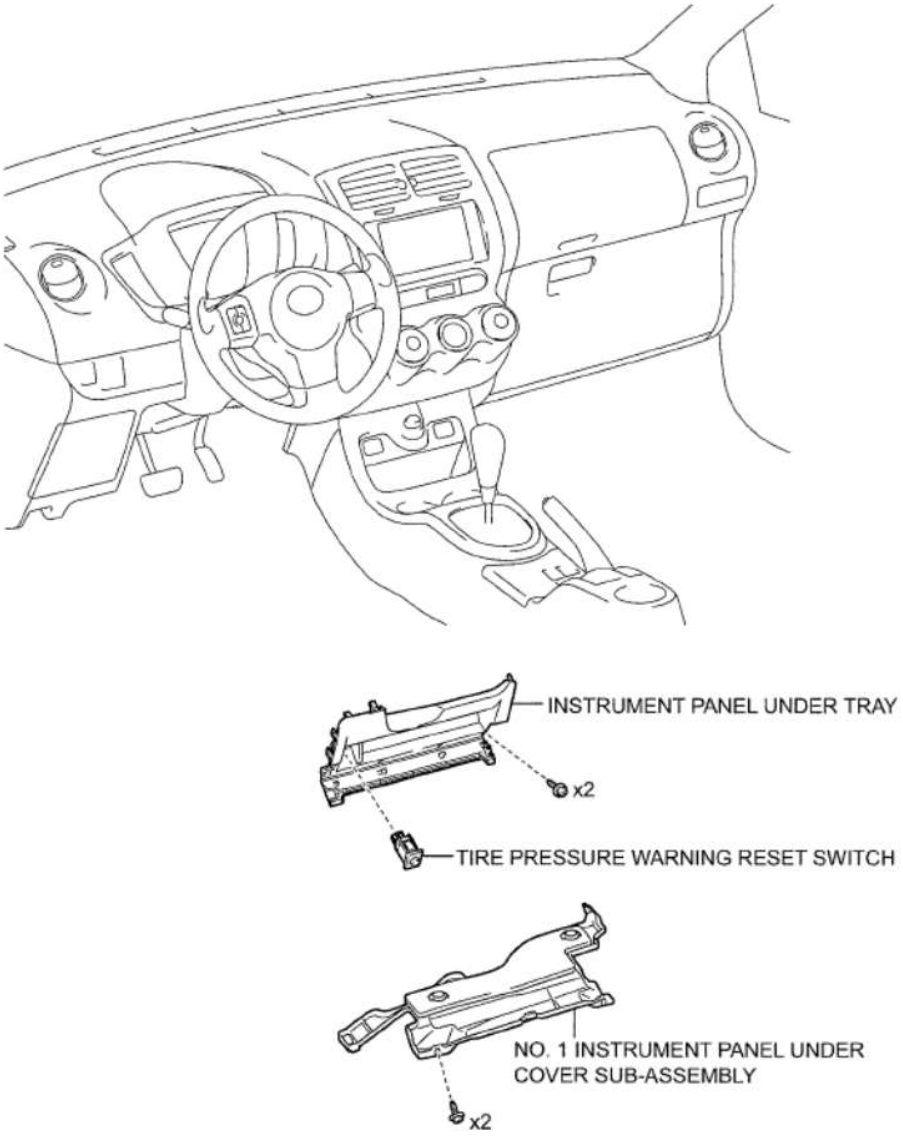


Fig. 70: Identifying Tire Pressure Warning Reset Switch Components
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

REMOVAL

1. **REMOVE NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **REMOVAL**)
2. **REMOVE INSTRUMENT PANEL UNDER TRAY** (See **REMOVAL**)
3. **REMOVE TIRE PRESSURE WARNING RESET SWITCH**

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a. Disengage the 2 claws and remove the tire pressure warning reset switch from the instrument panel under tray.

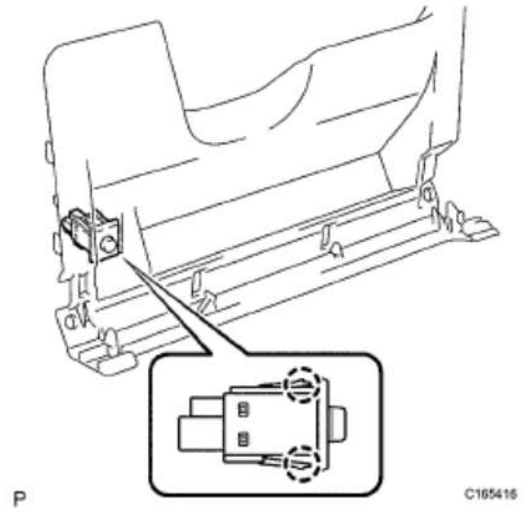


Fig. 71: Identifying Claws And Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION

1. **INSPECT TIRE PRESSURE WARNING RESET SWITCH**
   a. Measure the resistance between terminals 1 and 2 of the tire pressure warning reset switch when the tire pressure warning switch is ON and OFF.

Standard resistance

TESTER CONNECTION SPECIFIED CONDITION CHART

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

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

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

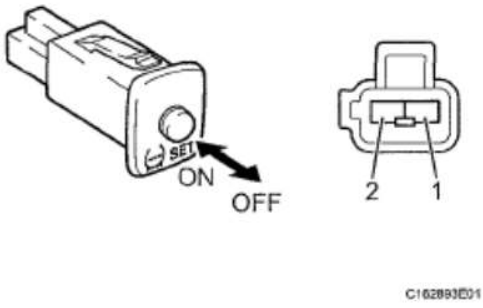


Fig. 72: Inspecting Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSTALLATION

1. **INSTALL TIRE PRESSURE WARNING RESET SWITCH**
   a. Engage the 2 claws to install the tire pressure warning reset switch.

   NOTE: Securely engage the 2 claws.

2. **INSTALL INSTRUMENT PANEL UNDER TRAY** (See **INSTALLATION**)
3. **INSTALL NO. 1 INSTRUMENT PANEL UNDER COVER SUB-ASSEMBLY** (See **INSTALLATION**)
4. **INSPECT TIRE PRESSURE WARNING SYSTEM**

   (See **TEST MODE PROCEDURE**)

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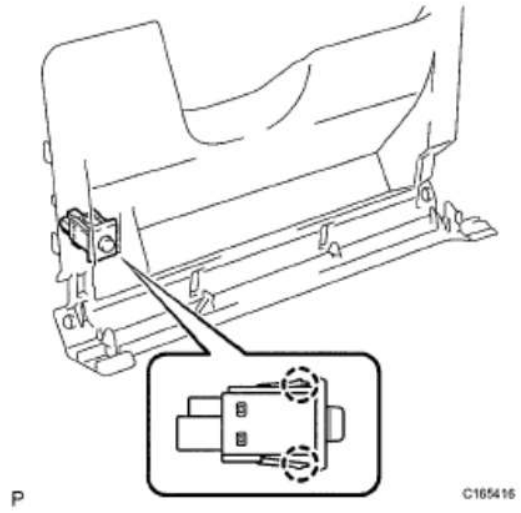


Fig. 73: Identifying Claws And Tire Pressure Warning Reset Switch
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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