

SUSPENSION

Tire Pressure Warning System (Diagnostic Codes & Circuit Tests) - Sienna

TIRE PRESSURE WARNING SYSTEM

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

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

HINT:

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

INSPECTION PROCEDURE

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

PROCEDURE

1. **PERFORM FORCED TRANSMISSION OF TRANSMITTER ID OF ALL WHEELS**
 - a. Set the tire pressure to the specified value. Refer to **INSPECTION** .
 - b. Turn the ignition switch off.
 - c. Connect the Techstream to the DLC3.
 - d. Turn the ignition switch to ON.

- e. Turn the Techstream on.
- f. Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- g. Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure/ min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.:	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is

	Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0	Actual tire	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or

Inflation Pressure	psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	inflation pressure	0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
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HINT:

*: It may take up to 5 or 6 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. Refer to [DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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. Rapidly release the pressures from each wheel by approximately 40 kPa (0.4 kgf/cm² , 5.8 psi) within 30 seconds.
- i. 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 up to 5 or 6 minutes to display the updated tire pressure data.
 - When the "ID Tire Inflation Pressure" data has not changed, reset the tire pressure to the appropriate specified value and rotate the tire 90 to 270°(including the spare tire). Then rapidly release the tire pressure and recheck the data.
- j. After confirming that all of the tire pressure data displayed on the Techstream screen has changed, set the tire pressure to the appropriate specified values.

HINT:

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

perform the inspection for malfunctions in transmission or reception function. Refer to **DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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).**

NG --> GO TO TRANSMITTER AND RECEIVER INSPECTION PROCEDURE

OK --> END

DTC C2121/21: NO SIGNAL FROM TRANSMITTER ID1; DTC C2122/22: NO SIGNAL FROM TRANSMITTER ID2; DTC C2123/23: NO SIGNAL FROM TRANSMITTER ID3; DTC C2124/24: NO SIGNAL FROM TRANSMITTER ID4; DTC 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 valve and transmitters constantly send radio waves to the tire pressure warning antenna and receiver.

Under the conditions below, the tire pressure warning antenna and receiver 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.
- Accessories are installed, such as tire chains or window film, which obstruct the radio signal of the tire pressure warning valve and transmitter.

HINT:

These DTCs are detected when the vehicle is driven and no signals are received for 20 minutes or more.

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

from C2181/81 to C2184/84 are output only in test mode.

DTC No.	DTC Detection Condition	Trouble Area
C2121/21 C2122/22 C2123/23 C2124/24	When all conditions below are met: • Tire pressure warning valve and transmitter is not in stop mode • Signal is not received from tire pressure warning valve and transmitter when driving the vehicle at more than 8 km/h (5 mph) 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

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

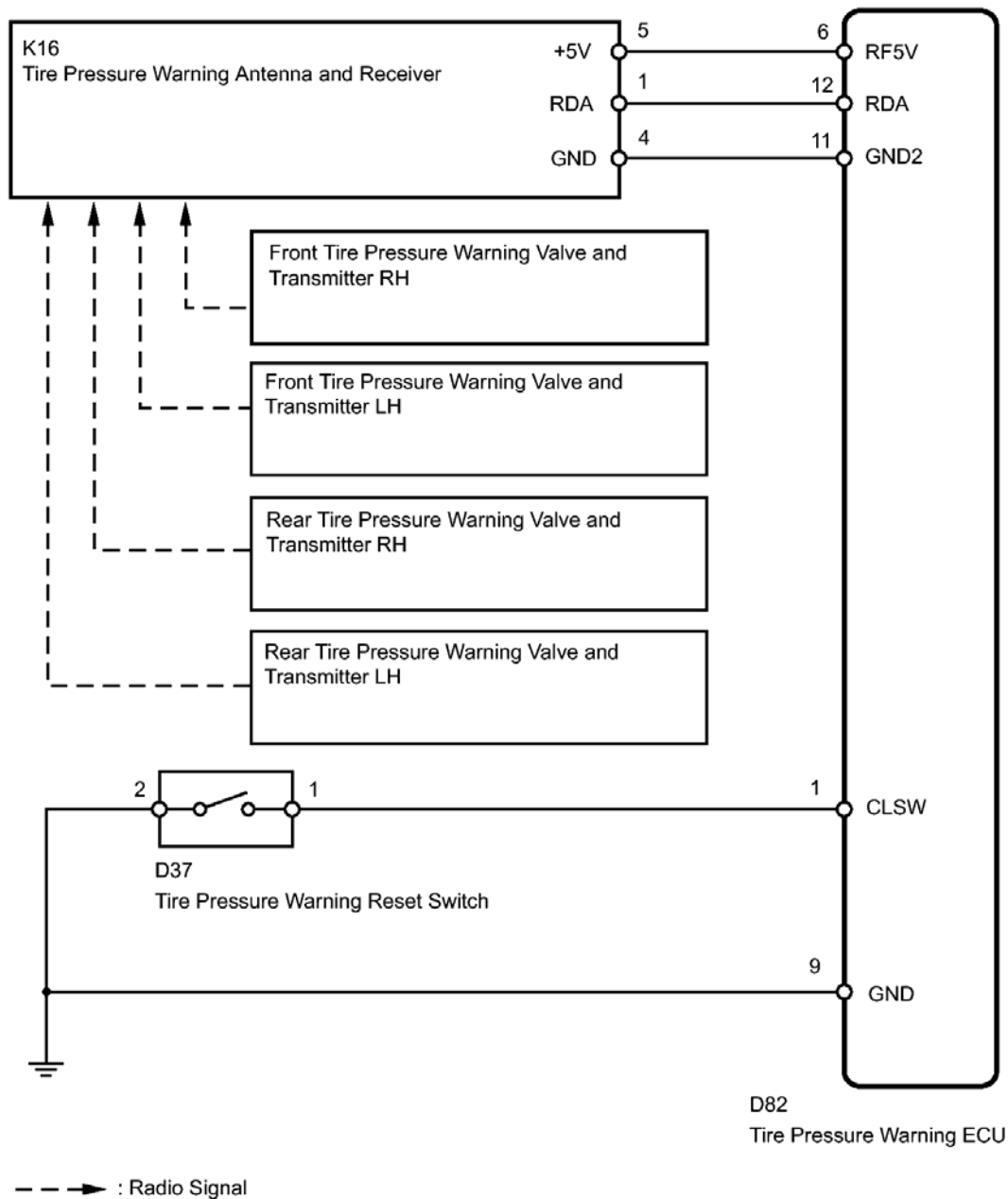


Fig. 1: Tire Pressure Warning Valve And Transmitter - Wiring Diagram
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

registration. Refer to REGISTRATION of the transmitter IDs into the tire pressure warning ECU after the ECU and/or the tire pressure warning valve and transmitter has been replaced.

PROCEDURE

1. READ OUTPUT DTC (DTC C2174/74)

- a. Turn the ignition switch off.
- b. Connect the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes.
- f. Read DTCs.

RESULT

Result	Proceed to
DTC C2174/74 is not output	A
DTC C2174/74 is output	B

NOTE: When DTC C2174/74 is output, troubleshoot that DTC first. Then troubleshoot DTCs C2121/21 to C2124/24.

B --> GO TO DTC C2174/74

A: Go to next step

2. CHECK FREQUENCY RECEIVING CONDITION

- a. Check if the vehicle is in conditions 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 blink for a minute and turn on 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

3. IDENTIFY TRANSMITTER CORRESPONDING TO DTC

- a. Set the tire pressure to the appropriate specified values. Refer to **INSPECTION** .
- b. Turn the ignition switch off.
- c. Connect the Techstream to the DLC3.
- d. Turn the ignition switch to ON.
- e. Turn the Techstream on.
- f. Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- g. Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been

	pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² ,	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure,

	65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take up to 5 or 6 minutes until the values are displayed.

- h. Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kgf/cm² , 5.8 psi) within 30 seconds.
- i. Check the Data List.

NOTE:

- It takes up to 5 or 6 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.**

- j. After confirming that the "ID Tire Inflation Pressure" data for one tire (ID1 to ID4) has changed, repeat this procedure for the other tires. Identify the transmitter that corresponds to the DTC.

RESULT

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

B --> See step 5

C --> END

A: Go to next step

4. CHECK HARNESS AND CONNECTOR (ECU - RECEIVER)

- Disconnect the D82 ECU connector.
- Disconnect the K16 receiver connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D82-12 (RDA) - K16-1 (RDA)	Always	Below 1 ohms
D82-11 (GND2) - K16-4 (GND)	Always	Below 1 ohms
D82-6 (RF5V) - K16-5 (+5V)	Always	Below 1 ohms

D82-12 (RDA) - Body ground	Always	10 kohms or higher
D82-11 (GND2) - Body ground	Always	10 kohms or higher
D82-6 (RF5V) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK TRANSMITTER ID

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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

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

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

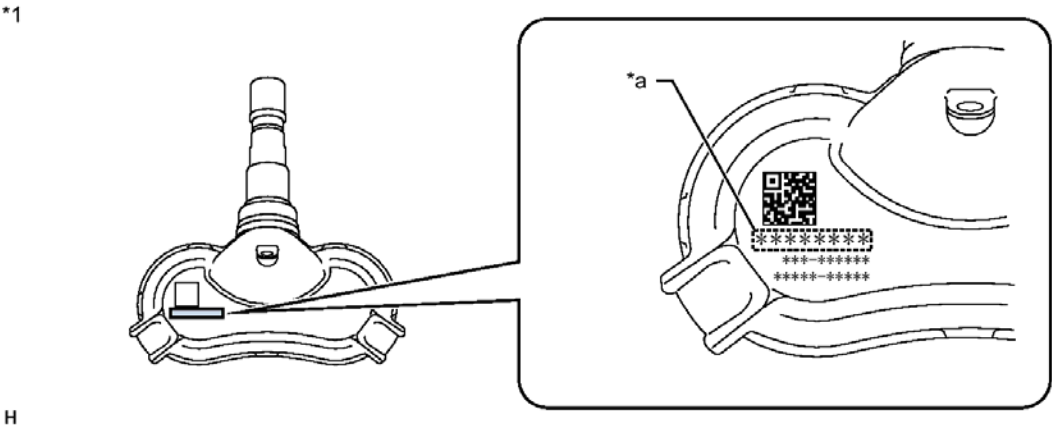


Fig. 2: Identifying Transmitter ID
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

*1	Tire Pressure Warning Valve and Transmitter	--
*a	Transmitter ID (8-digit number)	--

h. Confirm that the transmitter ID on the transmitter and recorded transmitter ID match.

RESULT

Result	Proceed to
Match	A
Do	

not match	B
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B --> See step 7

A: Go to next step

6. REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

- a. Replace the tire pressure warning valve and transmitter. Refer to **REMOVAL** .

NEXT: Go to next step

7. REGISTRATION OF TRANSMITTER ID

- a. Perform registration. Refer to **REGISTRATION** .

NEXT: Go to next step

8. PERFORM INITIALIZATION

- a. Perform initialization. Refer to **INITIALIZATION** .

NEXT: Go to next step

9. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- a. Turn the ignition switch off.
- b. Connect the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- f. Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0		If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute

Tire Inflation Pressure	kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative		If 100 kPa (1 kgf/cm ² , 14 psi) is displayed

ID3 Tire Inflation Pressure	pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

- Replace the tire pressure warning antenna and receiver. Refer to **REMOVAL** .

NEXT: Go to next step

11. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0		If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for

ID1 Tire Inflation Pressure	kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14		If 100 kPa (1 kgf/cm ² , 14 psi) is

ID3 Tire Inflation Pressure	psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

B --> See step 12

A --> END

12. REPLACE TIRE PRESSURE WARNING ECU. Refer to REMOVAL**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 No.	DTC Detection Condition	Trouble Area
C2126/26	After ID registration is completed, until all tire pressure warning valve and transmitter IDs are received by tire pressure warning ECU.	• ID registration failure • Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU

HINT:

The purpose of this DTC is to help prevent delivering a vehicle that has incorrectly registered IDs. After all IDs are registered, DTC C2126/26 is detected, and the tire pressure warning light blinks for 1 minute and then

comes on. If the tire pressure warning light does not turn off after a little while, IDs may be incorrectly registered.

INSPECTION PROCEDURE

NOTE:

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

PROCEDURE

1. IDENTIFY TRANSMITTER NOT RECEIVED

- Set the tire pressure to the appropriate specified values. Refer to INSPECTION .
- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² ,	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has

	65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure /	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed

	449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

*: It may take up to 5 or 6 minutes until the values are displayed.

- h. Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kgf/cm² , 5.8 psi) within 30 seconds.
- i. Check the Data List.

NOTE:

- It takes up to 5 or 6 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.

- j. 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

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

B --> END

A: Go to next step

2. CHECK TRANSMITTER ID

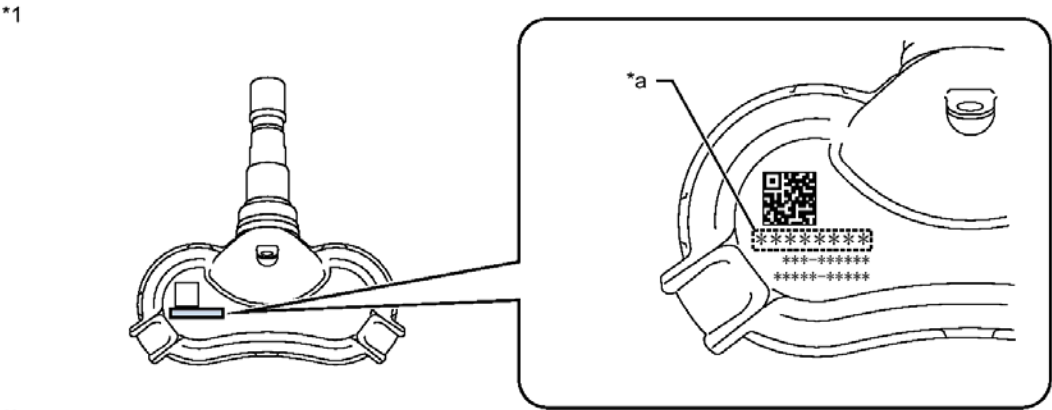
- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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

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

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



H

Fig. 3: Identifying Transmitter ID
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

TEXT IN ILLUSTRATION

	Tire Pressure	
*1	Warning Valve and Transmitter	--
*a	Transmitter ID (8-digit number)	--

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

RESULT

Result	Proceed to
Match	A
Do not match	B

B --> See step 4

A: Go to next step

3. REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

- Replace the tire pressure warning valve and transmitter. Refer to REMOVAL.

NEXT: Go to next step

4. REGISTRATION OF TRANSMITTER ID

- Perform registration. Refer to REGISTRATION.

NEXT: Go to next step

5. PERFORM INITIALIZATION

- Perform initialization. Refer to INITIALIZATION.

NEXT: Go to next step

6. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor/ Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1		If 100 kPa (1 kgf/cm ² ,

ID1 Tire Inflation Pressure	kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation pressure / min.: Absolute		If 100 kPa

ID3 Tire Inflation Pressure	pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	(1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- If no "ID Tire Inflation Pressure" data has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

- Replace the tire pressure warning antenna and receiver. Refer to **REMOVAL** .

NEXT: Go to next step

8. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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

ID1 Tire Inflation Pressure	Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation		

ID3 Tire Inflation Pressure	pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- If no "ID Tire Inflation Pressure" data has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

B --> See step 9

A --> END

9. REPLACE TIRE PRESSURE WARNING ECU. Refer to REMOVAL

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 No.	DTC Detection Condition	Trouble Area
C2141/41 C2142/42	The battery of the tire pressure warning valve and transmitter is depleted or G-	• Tire pressure warning valve and transmitter

C2143/43 C2144/44	SW in the tire pressure warning valve and transmitter is abnormal.	• Tire pressure warning ECU
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HINT:

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

INSPECTION PROCEDURE

NOTE:

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

PROCEDURE

1. IDENTIFY TRANSMITTER CORRESPONDING TO DTC

- Set the tire pressure to the specified value. Refer to INSPECTION .
- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Display the "ID Tire Inflation Pressure" data for each wheel using the tester.
- Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kgf/cm² , 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 is 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

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note

ID1 Tire Inflation Pressure	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

	(3.6 kgf/cm ² , 51 psi)		
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been

	pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		received.*
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HINT:

*: It may take up to 5 or 6 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. Refer to [DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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 \(Test Mode DTC\)](#).

- i. Check the Data List.

RESULT

Condition	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.
- j. 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.
 - k. 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 transmitter IDs and the output DTC.

1. Set the tire pressures to the appropriate specified values. Refer to **INSPECTION** .

NEXT: Go to next step

2. REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

- a. Replace the identified tire pressure warning valve and transmitter with a new one. Refer to **REMOVAL** .

HINT:

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

NEXT: Go to next step

3. REGISTRATION OF TRANSMITTER ID

- a. Register the transmitter ID for all wheels. Refer to **REGISTRATION** .

NEXT: Go to next step

4. PERFORM INITIALIZATION

- a. Perform initialization. Refer to **INITIALIZATION** .

NEXT: Go to next step

5. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- a. Turn the ignition switch off.
- b. Connect the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- f. Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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

ID1 Tire Inflation Pressure	Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation		

ID3 Tire Inflation Pressure	pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

B --> END

A --> See step 6

6. REPLACE TIRE PRESSURE WARNING ECU. Refer to 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 the tire pressure, and transmits the information to the tire pressure warning ECU along with the transmitter ID. If the measured temperature is out of the specified range, the tire pressure warning ECU recognizes it as a malfunction, outputs DTCs, and the tire pressure warning light blinks for 1 minute and then remains on.

DTC 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 number of times.	• 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 transmitter IDs stored in the old ECU using the Techstream and note them down before removal.
- It is necessary to perform initialization. Refer to INITIALIZATION after registration. Refer to REGISTRATION of the transmitter IDs into the tire pressure warning ECU after the ECU and/or valve and transmitter has been replaced.

PROCEDURE

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

OK: Go to next step

2. IDENTIFY TRANSMITTER CORRESPONDING TO DTC

- a. Set the tire pressure to the specified value. Refer to INSPECTION.
- b. Turn the ignition switch off.
- c. Connect the Techstream to the DLC3.
- d. Turn the ignition switch to ON.
- e. Turn the Techstream on.
- f. Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- g. Display the "ID Tire Inflation Pressure" data for each wheel using the tester.
- h. Rapidly reduce the tire pressure for each wheel at least 40 kPa (0.4 kgf/cm², 5.8 psi) within 30 seconds.
- i. Check the Data List.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

	pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² ,	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure,

	65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		data has not been received.*
--	---	--	------------------------------------

HINT:

*: It may take up to 5 or 6 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. Refer to [DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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

Condition	Detection Condition
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 up to 5 or 6 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.
- j. 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.

- k. 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 transmitter IDs and output DTC.

NEXT: Go to next step

3. REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER

- a. Replace the identified tire pressure warning valve and transmitter with a new one. Refer to **REMOVAL** .

HINT:

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

NEXT: Go to next step

4. REGISTRATION OF TRANSMITTER ID

- a. Register the transmitter ID for all 4 tires. Refer to **REGISTRATION** .

NEXT: Go to next step

5. PERFORM INITIALIZATION

- a. Perform initialization. Refer to **INITIALIZATION** .

NEXT: Go to next step

6. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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

ID1 Tire Inflation Pressure	Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation		

ID3 Tire Inflation Pressure	pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

B --> END

A --> See step 7

7. REPLACE TIRE PRESSURE WARNING ECU. Refer to REMOVAL

DTC C2171/71: TRANSMITTER ID NOT REGISTERED

DESCRIPTION

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

When the IDs have never been registered, a DTC is output.

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

INSPECTION PROCEDURE

NOTE:

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

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

PROCEDURE

1. CONFIRM REGISTRATION CONDITION (REGISTERED TRANSMITTER IDS)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Display	Normal Condition	Diagnostic Note
Registered ID1 Code	Registered ID1 code/ min.: 0 max.: FFFFFFFF*	The transmitter ID registered in the transmitter ID1 is displayed	*: Displayed only when the transmitter ID is not registered.
Registered ID2 Code	Registered ID2 code/ min.: 0 max.: FFFFFFFF*	The transmitter ID registered in the transmitter ID2 is displayed	*: Displayed only when the transmitter ID is not registered.
Registered ID3 Code	Registered ID3 code/ min.: 0 max.: FFFFFFFF*	The transmitter ID registered in the transmitter ID3 is displayed	*: Displayed only when the transmitter ID is not registered.
Registered ID4 Code	Registered ID4 code/	The transmitter ID registered	*: Displayed only when

ID4 Code	min.: 0 max.: FFFFFFFF*	in the transmitter ID4 is displayed	the transmitter ID is not registered.
----------	-------------------------------	--	--

OK

The registered transmitter IDs are displayed on the tester screen.

RESULT

Result	Proceed to
NG	A
OK	B

B --> See step 4

A: Go to next step

2. PERFORM REGISTRATION (TRANSMITTER ID)

- Register the transmitter IDs for all 4 tires. Refer to **REGISTRATION** .

NEXT: Go to next step

3. PERFORM INITIALIZATION

- Perform initialization. Refer to **INITIALIZATION** .

NEXT: Go to next step

4. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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

ID1 Tire Inflation Pressure	Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
	ID3 tire inflation		

ID3 Tire Inflation Pressure	pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

B --> See step 5

A --> END

5. REPLACE TIRE PRESSURE WARNING ECU. Refer to REMOVAL

DTC C2174/74: VEHICLE SPEED SIGNAL MALFUNCTION; DTC C2191/91: VEHICLE SPEED SIGNAL ERROR (TEST MODE DTC)

DESCRIPTION

Speed signals are input into the tire pressure warning ECU from the combination meter. At the same time, the G-SW in the tire pressure warning valve and transmitter detects driving conditions, and sends signals to the tire pressure warning ECU. If the speed signal from the combination meter stops and the G-SW signal in the tire pressure warning valve and transmitter indicates that the vehicle is being driven, DTC C2174/74 is stored.

DTC C2191/91 is stored only in test mode.

DTC No.	DTC Detection Condition	Trouble Area
C2174/74	Vehicle speed signal malfunction	• Combination meter • Vehicle speed signal circuit • Harness or connector • Tire pressure warning ECU • Tire pressure warning valve and

		transmitter
C2191/91	Test mode procedure is performed	• Meter / gauge system (speed signal) • Vehicle speed signal circuit • Harness or connector • Tire pressure warning ECU

WIRING DIAGRAM

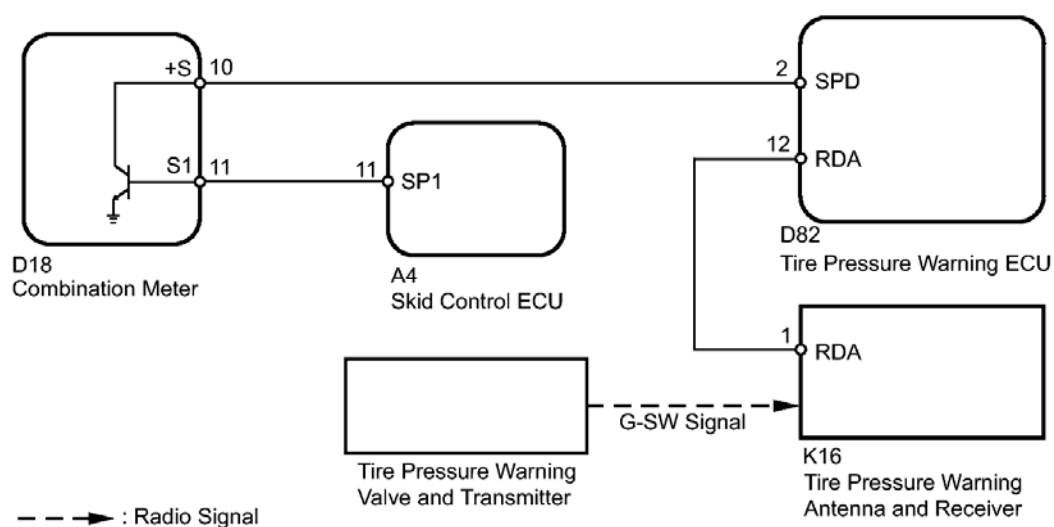


Fig. 4: Vehicle Speed Signal - Wiring Diagram

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

INSPECTION PROCEDURE

NOTE:

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

HINT:

When the speedometer needle is not moving, first troubleshoot the meter/gauge system. Refer to **HOW TO PROCEED WITH TROUBLESHOOTING** .

PROCEDURE

1. READ VALUE USING TECHSTREAM (VEHICLE SPEED)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check that the values indicated on the Techstream and on the combination meter are the same.

TIRE PRESSURE MONITOR

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

OK

Vehicle speed indicated on the Techstream indicates the actual speed.

NG --> See step 3

OK: Go to next step

2. CHECK DTC

- Perform a driving test.
- Check for DTCs.

HINT:

The time required for DTC C2174/74 to be stored is 20 minutes.

RESULT

Result	Proceed to
DTC C2174/74 is not output	A
DTC C2174/74	B

is output |

B --> See step 6

A --> See step 11

3. CHECK HARNESS AND CONNECTOR (ECU - COMBINATION METER)

- a. Disconnect the D82 tire pressure warning ECU connector.
- b. Disconnect the D18 combination meter connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D82-2 (SPD) - D18-10 (+S)	Always	Below 1 ohms
D82-2 (SPD) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

4. CHECK HARNESS AND CONNECTOR (COMBINATION METER - SKID CONTROL ECU)

- a. Disconnect the A4 skid control ECU connector.
- b. Disconnect the D18 combination meter connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
A4-11 (SP1) - D18-11 (S1)	Always	Below 1 ohms
A4-11 (SP1) - Body	Always	10 kohms or higher

ground		
--------	--	--

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

5. CHECK DTC (SFI SYSTEM)

a. Check for DTCs.

- For 2GR-FE. Refer to **DTC CHECK / CLEAR** .
- For 1AR-FE. Refer to **DTC CHECK / CLEAR** .

RESULT

Result	Proceed to
DTC P0500 is not output	A
DTC P0500 is output	B

B --> See step 12

A: Go to next step

6. REPLACE TIRE PRESSURE WARNING ECU

a. Replace the tire pressure warning ECU. Refer to **REMOVAL** .

NEXT: Go to next step

7. REGISTRATION OF TRANSMITTER ID

a. Perform registration. Refer to **REGISTRATION** .

NEXT: Go to next step

8. PERFORM INITIALIZATION

a. Perform initialization. Refer to **INITIALIZATION** .

NEXT: Go to next step

9. CHECK DTC

a. Perform a driving test.

- b. Check for DTCs.

HINT:

The time required for DTC C2174/74 to be stored is 20 minutes.

RESULT

Result	Proceed to
DTC C2174/74 is output	A
DTC C2174/74 is not output	B

B --> END

A --> See step 10

10. **REPLACE TIRE PRESSURE WARNING VALVE AND TRANSMITTER. Refer to REMOVAL**
11. **USE SIMULATION METHOD TO CHECK. Refer to HOW TO PROCEED WITH TROUBLESHOOTING**
12. **REPLACE COMBINATION METER ASSEMBLY. Refer to REMOVAL**

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 No.	DTC Detection Condition	Trouble Area
C2176/76	Malfunction in the tire pressure warning ECU internal circuit.	Tire pressure warning ECU

INSPECTION PROCEDURE

NOTE:

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

PROCEDURE

1. REPLACE TIRE PRESSURE WARNING ECU

- a. Replace the tire pressure warning ECU. Refer to **REMOVAL** .

NEXT --> END

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; or 4) a new vehicle is delivered.

DTC No.	DTC Detection Condition	Trouble Area
C2177/77	When all conditions below are met: • During initialization • 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

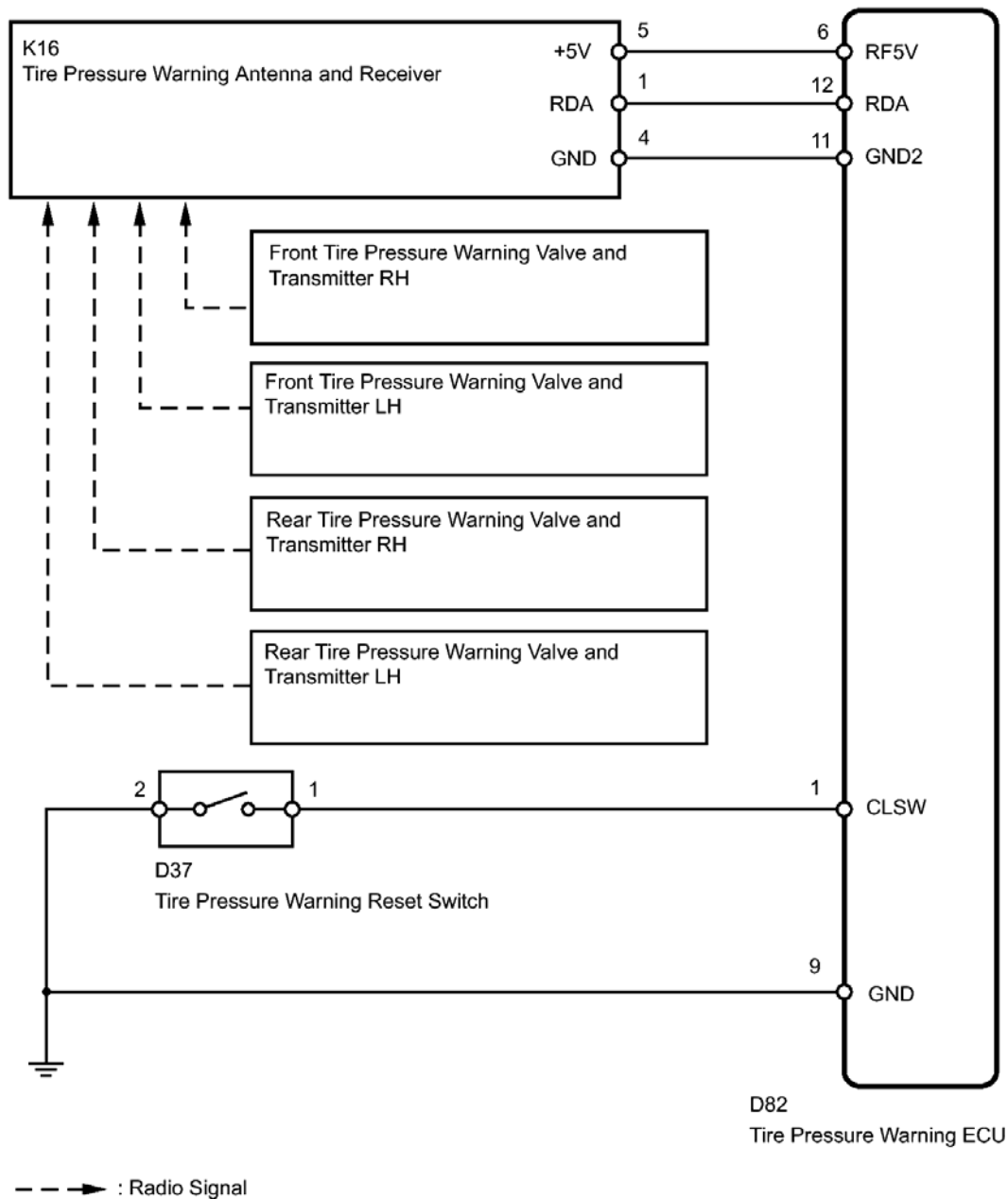


Fig. 5: Tire Pressure Warning Valve And Transmitter - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

NOTE:

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

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

PROCEDURE

1. CHECK FREQUENCY RECEIVING CONDITION

- Check if the vehicle is in conditions such as the ones described below:
 - 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 blink for a minute and turn on in a particular area.

- 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

- Perform initialization. Refer to **INITIALIZATION**.

NEXT: Go to next step

3. READ VALUE USING TECHSTREAM (TIRE INFLATION PRESSURE)

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Check the values by referring to the table below.

TIRE PRESSURE MONITOR

Tester Display	Measurement Item/Range	Normal Condition	Diagnostic Note
ID1 Tire Inflation Pressure	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi),	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been

	Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		received.*
ID3 Tire Inflation Pressure	ID3 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received.*
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative

	(4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)		pressure, data has not been received.*
--	---	--	---

HINT:

- *: It may take up to 5 or 6 minutes until the values are displayed.
- When no "ID Tire Inflation Pressure" has changed, rotate the tire 90 to 270°. Then recheck it.

RESULT

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

B --> END

A --> See step 4

- 4. GO TO C2121/21 to C2124/24 FLOWCHART. Refer to DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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 C2178/78: BATTERY VOLTAGE MALFUNCTION

DESCRIPTION

DTC No.	DTC Detection Condition	Trouble Area
	With ignition switch ON,	

C2178/78	when IG voltage of less than 10 V continues for 20 minutes or more, or IG voltage of over 16 V continues for 0.5 seconds or more	• Battery • Charging system • Tire pressure warning ECU
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INSPECTION PROCEDURE

If DTC C2178/78 is output, inspect the battery and charging system.

- for 2GR-FE. Refer to **ON-VEHICLE INSPECTION** .
- for 1AR-FE. Refer to **ON-VEHICLE INSPECTION** .

If the battery and charging system are normal, perform the "ECU Power Source Circuit" inspection procedure. Refer to **ECU Power Source Circuit**.

CIRCUIT TESTS

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

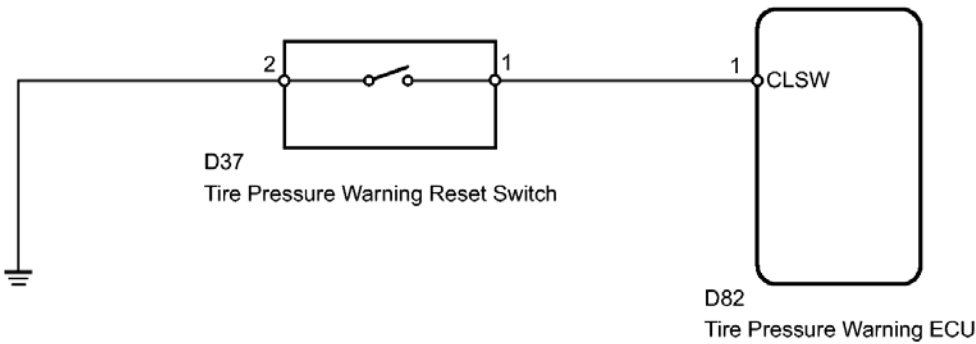


Fig. 6: Tire Pressure Warning Reset Switch Circuit - Wiring Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

INSPECTION PROCEDURE

- NOTE:**
- When replacing the tire pressure warning ECU, read the transmitter IDs

stored in the old ECU using the Techstream and note down before removal.

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

PROCEDURE

1. CHECK TIRE PRESSURE WARNING RESET SWITCH FUNCTION

- a. Perform the tire pressure warning reset switch test in Test Mode Procedure. Refer to TEST MODE PROCEDURE .

OK

Reset switch ON

Tire pressure warning light turns on.

Reset switch OFF

Tire pressure warning light blinks at 0.125 second intervals.

NG --> See step 2

OK --> END

2. INSPECT TIRE PRESSURE WARNING RESET SWITCH

- a. Remove the tire pressure warning reset switch. Refer to REMOVAL .

*a



Fig. 7: Tire Pressure Warning Reset Switch Connector End View
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

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

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
1 - 2	ON (Switch is pressed and held)	Below 1 ohms
	OFF (Switch is not pressed)	10 kohms or higher

TEXT IN ILLUSTRATION

*a	Component without harness connected (Tire Pressure Warning Reset
----	--

|Switch)

NG --> See step 4

OK: Go to next step

3. CHECK HARNESS AND CONNECTOR (RESET SWITCH - ECU AND BODY GROUND)

- a. Disconnect the D37 reset switch connector.
- b. Disconnect the D82 ECU connector.
- c. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D82-1 (CLSW) - D37-1	Always	Below 1 ohms
D82-1 (CLSW) - Body ground	Always	10 kohms or higher
D37-2 - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 5

4. REPLACE TIRE PRESSURE WARNING RESET SWITCH. Refer to REMOVAL

5. REPLACE TIRE PRESSURE WARNING ECU. Refer to 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. Connecting terminals TC and CG of the DLC3 makes the tire pressure warning light blink and output the DTC.

WIRING DIAGRAM



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

INSPECTION PROCEDURE

NOTE:

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

PROCEDURE

1. PERFORM ACTIVE TEST USING TECHSTREAM (COMBINATION METER)

- a. Turn the ignition switch off.
- b. Connect the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menus: Body / Combination Meter / Active Test.
- f. Check the condition of the tire pressure warning light by operating the tester.

COMBINATION METER

Tester Display	Test Part	Control Range	Diagnostic Note
Indicat. Tire	Tire Pressure	ON or	

Pressure Warning System	Warning Light illuminates	OFF	-
-------------------------------	---------------------------------	-----	---

OK

The warning light turns on when operating the tester.

NG --> See step 3

OK: Go to next step

2. CHECK HARNESS AND CONNECTOR (COMBINATION METER - ECU)

- Disconnect the D82 ECU connector.
- Disconnect the D18 meter connector.
- Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D82-5 (IND) - D18-26 (TIRE)	Always	Below 1 ohms
D82-5 (IND) - Body ground	Always	10 kohms or higher

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 4

3. GO TO METER / GAUGE SYSTEM. Refer to HOW TO PROCEED WITH TROUBLESHOOTING

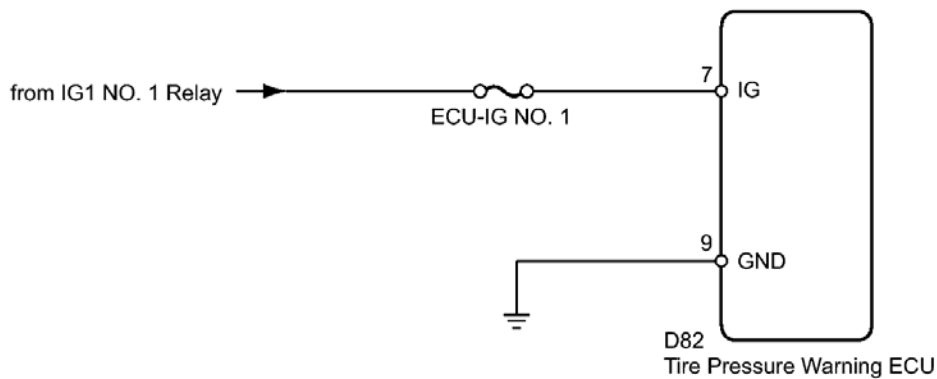
4. CHECK ECU POWER SOURCE CIRCUIT. Refer to ECU Power Source Circuit

ECU Power Source Circuit

DESCRIPTION

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

WIRING DIAGRAM



6

Fig. 9: ECU Power Source Circuit - Wiring Diagram

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

INSPECTION PROCEDURE

NOTE:

- When replacing the tire pressure warning ECU, read the transmitter IDs stored in the old ECU using the Techstream and write them down before removal.
- It is necessary to perform initialization. Refer to INITIALIZATION after registration. Refer to REGISTRATION of the transmitter IDs into the tire pressure warning ECU after the ECU and/or tire pressure warning valve and transmitter has been replaced.
- Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. CHECK HARNESS AND CONNECTOR (ECU - BATTERY)

- a. Disconnect the D82 ECU connector.
- b. Measure the voltage according to the value(s) in the table below.

*a

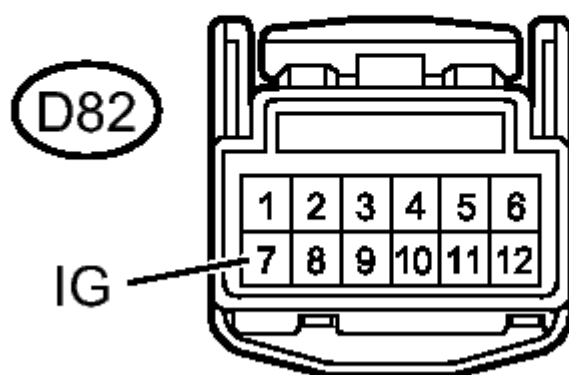


Fig. 10: Measuring Voltage Of TPS ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Voltage

Tester Connection	Switch Condition	Specified Condition
D82-7 (IG) - Body ground	Ignition switch ON	11 to 14 V
	Ignition switch off	Below 1 V

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Tire Pressure Warning ECU)
----	---

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK: Go to next step

2. **CHECK HARNESS AND CONNECTOR (ECU - BODY GROUND)**

- a. Disconnect the D82 ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

*a

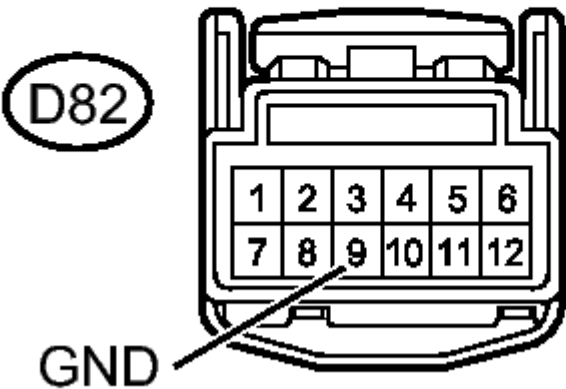


Fig. 11: Measuring Resistance Of TPS ECU
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

Standard Resistance

Tester Connection	Condition	Specified Condition
D82-9 (GND) - Body ground	Always	Below 1 ohms

TEXT IN ILLUSTRATION

*a	Front view of wire harness connector (to Tire Pressure Warning ECU)
----	---

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 3

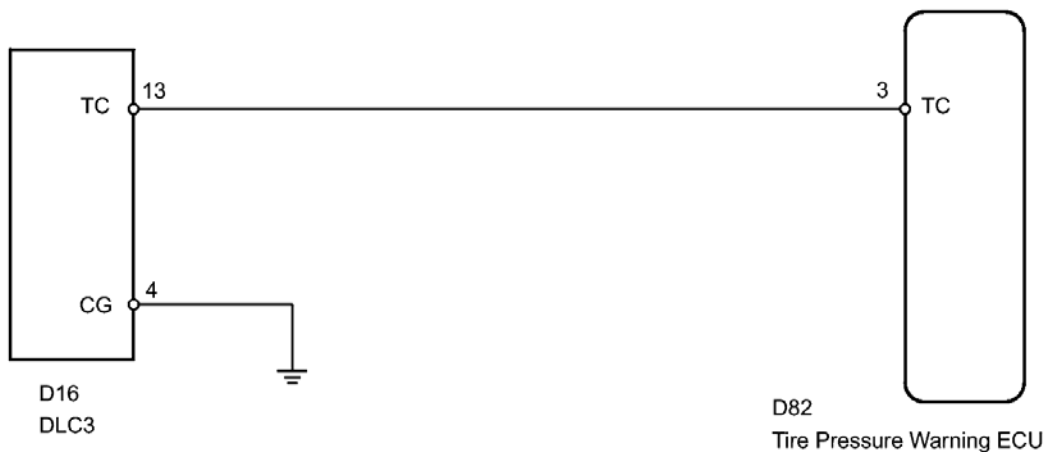
3. REPLACE TIRE PRESSURE WARNING ECU. Refer to REMOVAL

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



Y

Fig. 12: 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 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 the Techstream and write them down before removal.

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

PROCEDURE

1. CHECK HARNESS AND CONNECTOR (DLC3 - ECU AND BODY GROUND)

- a. Disconnect the D82 ECU connector.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
D82-3 (TC) - D16-13 (TC)	Always	Below 1 ohms
D82-3 (TC) - Body ground	Always	10 kohms or higher
D16-4 (CG) - Body ground	Always	Below 1 ohms

NG --> REPAIR OR REPLACE HARNESS OR CONNECTOR

OK --> See step 2

2. CHECK ECU POWER SOURCE CIRCUIT. Refer to ECU Power Source Circuit

SUSPENSION

Tire Pressure Warning System (Diagnostics - Introduction) - Sienna

TIRE PRESSURE WARNING SYSTEM

PRECAUTION

PRECAUTION

1. IGNITION SWITCH EXPRESSIONS

- a. The type of ignition switch used on this model differs according to the specifications of the vehicle. The expressions listed in the table below are used in this information.

Expression	Switch (Position)	Engine Switch (Condition)
Ignition switch off	LOCK	Off
Ignition switch ACC	ACC	On (ACC)
Ignition switch ON	ON	On (IG)
Engine start	START	Start

2. TIRE PRESSURE WARNING SYSTEM PRECAUTION

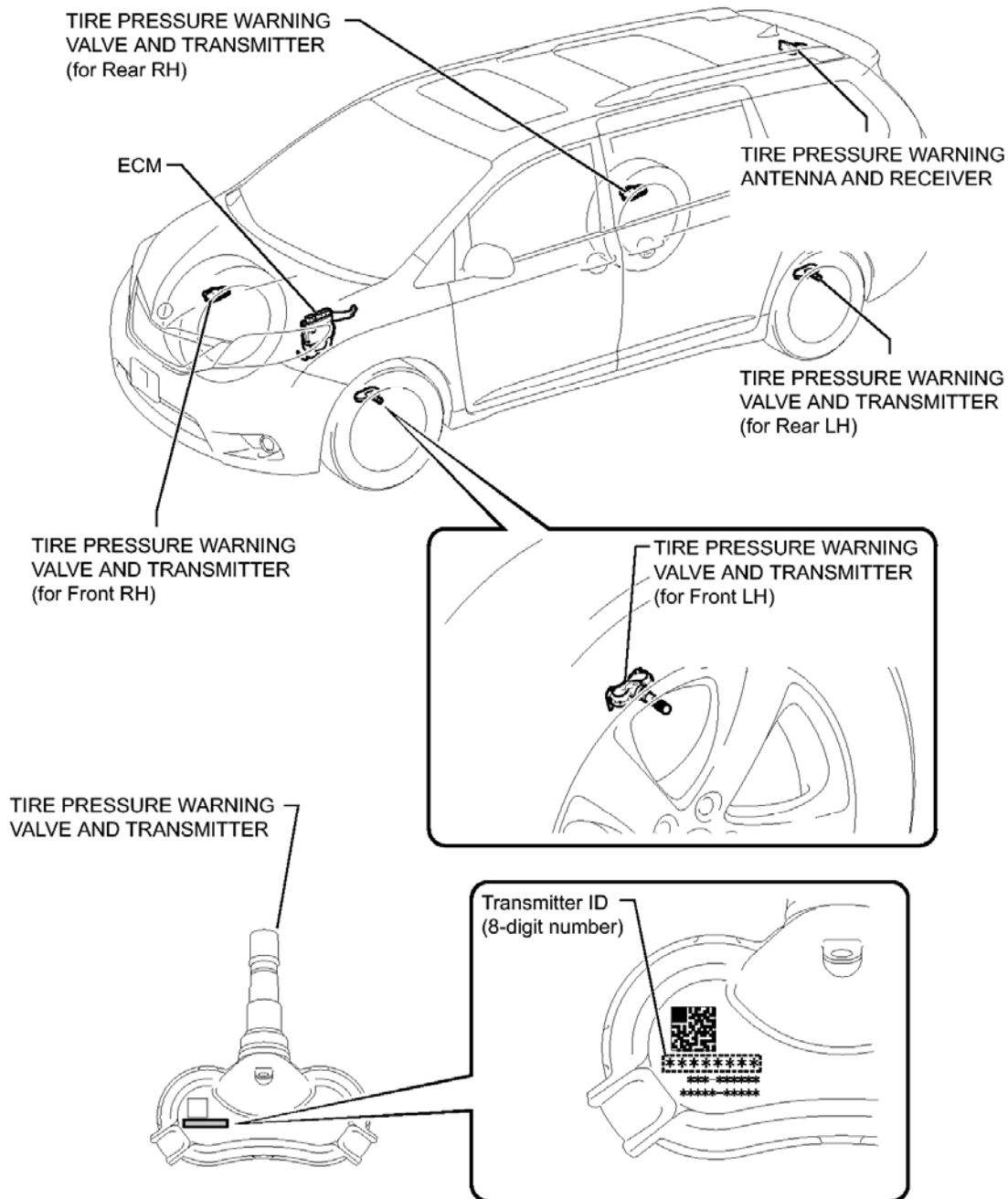
- a. It is necessary for the tire pressures to be adjusted periodically because tire pressure decreases naturally over time.
- b. In winter, tire pressure may decrease due to low ambient temperatures (tire pressure decreases by approximately 10 kPa (0.1 kgf/cm², 1.5 psi) for every 10°C (50°F) drop in the ambient temperature). Therefore, the tire pressure warning system is more likely to indicate a warning if the tire pressures are not adjusted appropriately. If the daily temperature variation is large, add enough so that the tire pressures are suitable under cold conditions. As a result, unnecessary tire pressure warning operation should decrease.
- c. Depending on the tire type, the system may not function properly even if the specified wheels are used.
- d. To prevent damage to the tire pressure warning valve and transmitter, make sure that the tire pressure warning valve and transmitter does not interfere with the tire bead when installing or removing a tire.
- e. To prevent damage to the tire pressure warning valve and transmitter, before disengaging the tire bead or removing the tire from the wheel, drop the tire pressure warning valve and transmitter into the wheel.
- f. Always use a new grommet, washer and nut when installing a tire pressure warning valve and

transmitter.

- g. When one or more tire pressure warning valve and transmitters or the tire pressure warning ECU is replaced, the transmitter IDs for all of the tire pressure warning valve and transmitters must be re-registered. Before registering the transmitter ID of the new tire pressure warning valve and transmitter, check the Data List and record all of the transmitter IDs that are already registered.

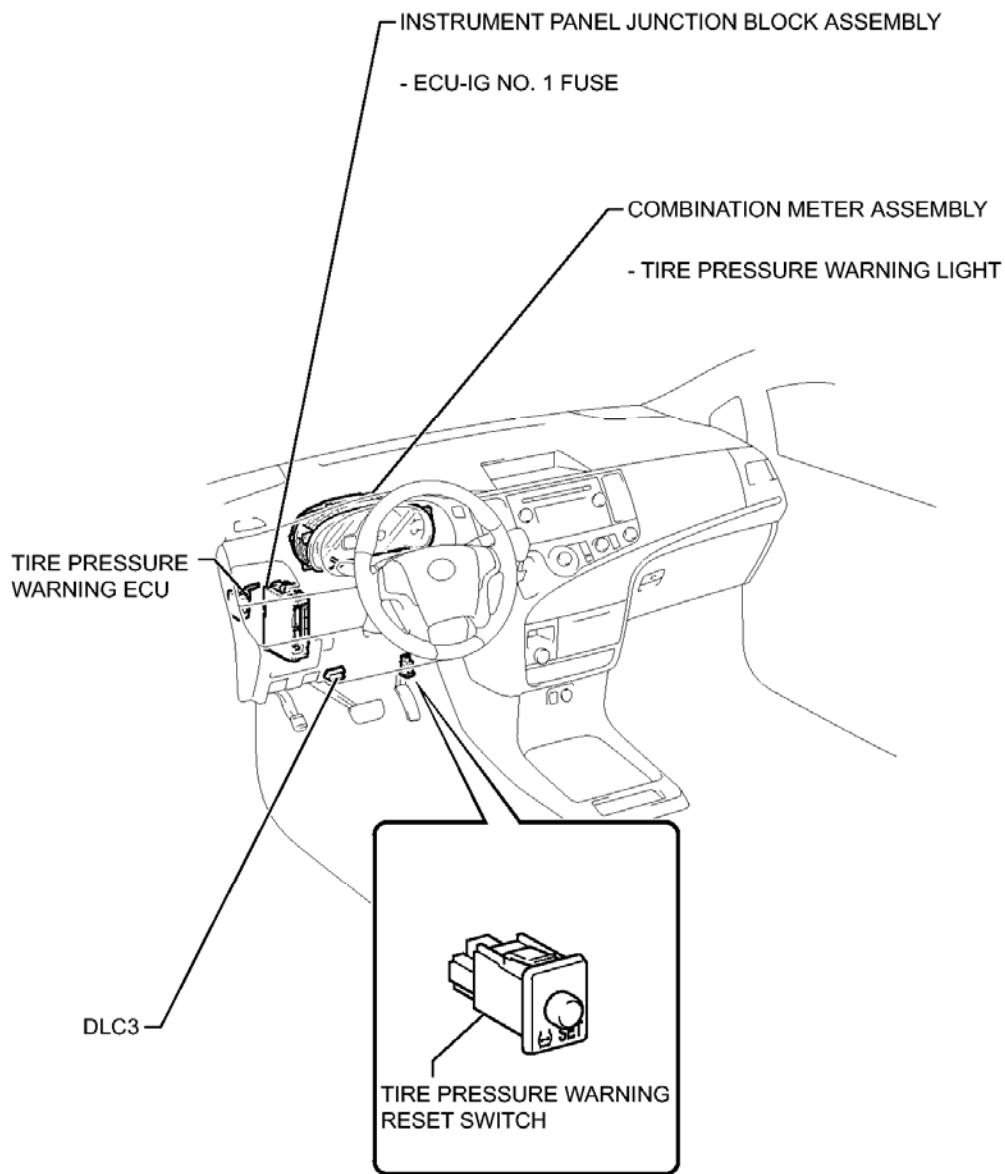
PARTS LOCATION

ILLUSTRATION



P
Fig. 1: Tire Pressure Warning System Components Location (1 Of 2)
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

ILLUSTRATION



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

SYSTEM DIAGRAM

SYSTEM DIAGRAM

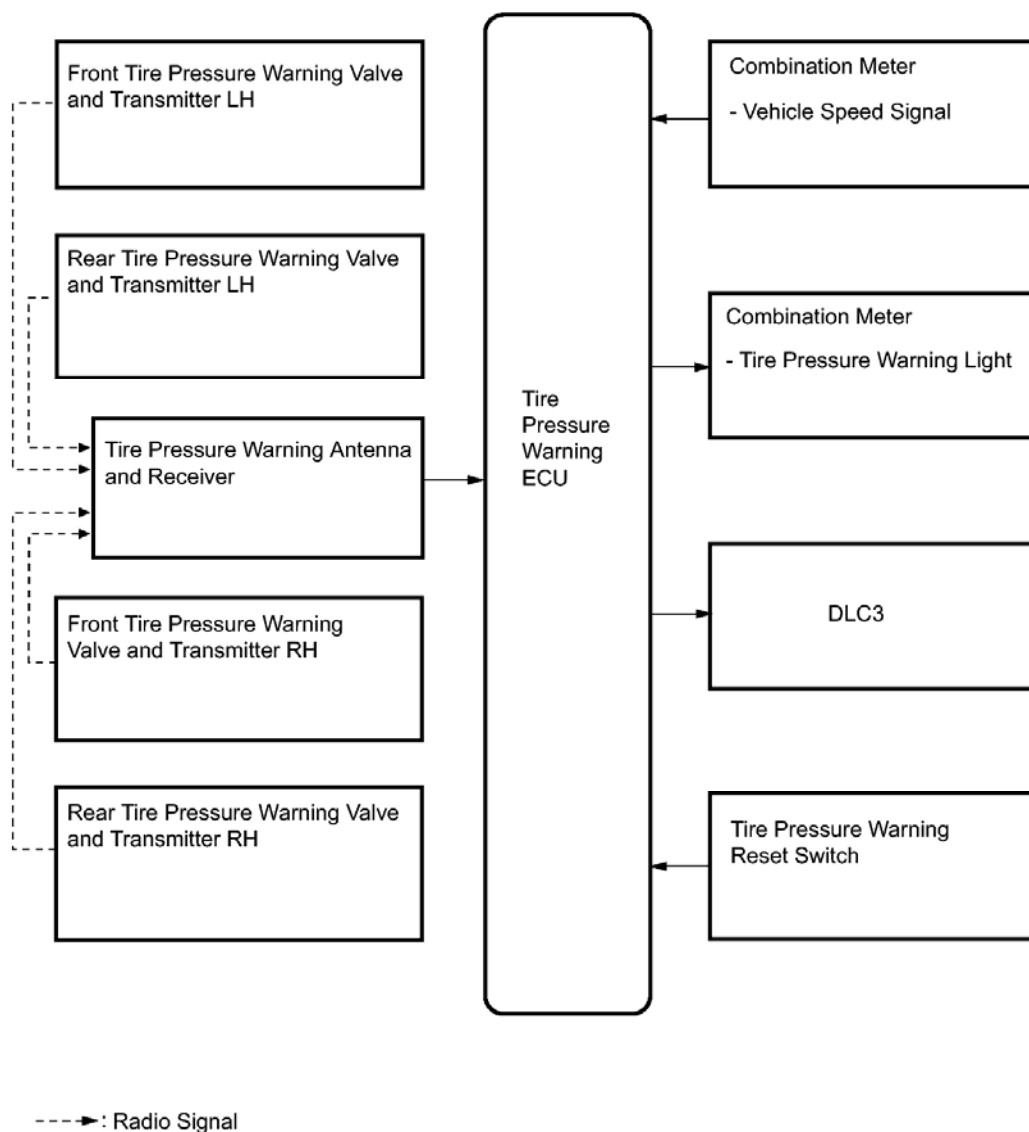


Fig. 3: Tire Pressure Warning System Diagram
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

HINT:

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

SYSTEM DESCRIPTION

SYSTEM DESCRIPTION

1. DESCRIPTION OF SYSTEM

- a. When the tire pressure warning system detects that the tire pressure of a tire becomes lower than threshold, it will inform the driver using a warning light.
- b. The tire pressure warning antenna and receiver receives the transmitter ID, temperature and tire pressure information from the tire pressure warning valve and transmitters shown in the following illustration. This information is used to determine when the pressure in one of the tires has dropped.

2. DESCRIPTION OF REGISTRATION

- a. When tires and wheels are replaced, always ensure that each transmitter ID is correctly registered.
- b. When one or more tire pressure warning valve and transmitters or the tire pressure warning ECU is replaced, the transmitter IDs for all of the tire pressure warning valve and transmitters must be re-registered. Before registering the transmitter ID of the new tire pressure warning valve and transmitter, check the Data List and record all of the transmitter IDs that are already registered.

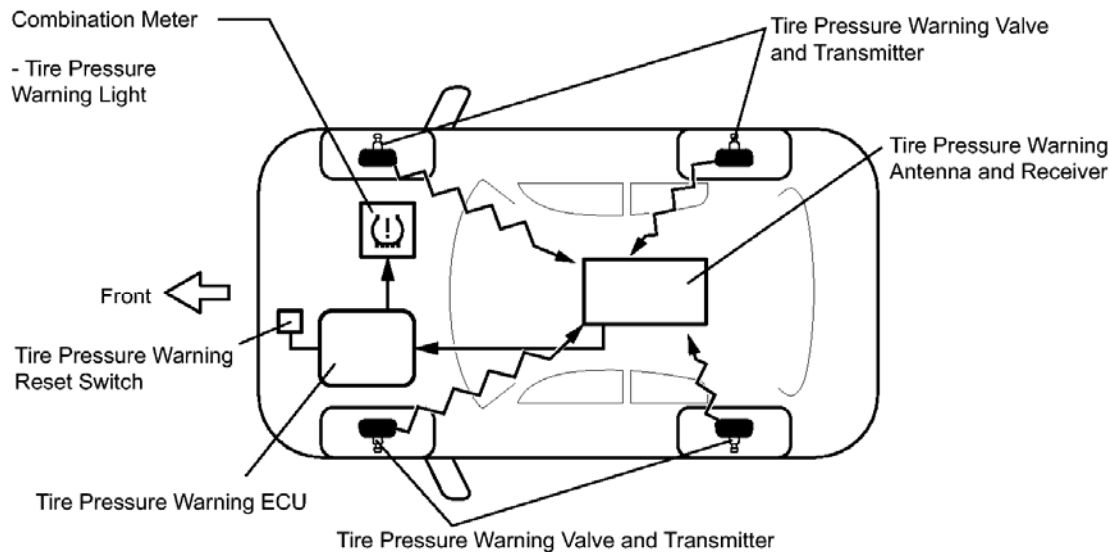


Fig. 4: Identifying Tire Pressure Warning Valve And Transmitter
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

3. TIRE PRESSURE WARNING RESET SWITCH

- a. 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 fitted to the vehicle. Therefore, the warning threshold must be set to the proper value in order to comply with local regulations.
- b. Operate the tire pressure warning reset switch only after the inflation pressures of all tires (except the spare tire) have been adjusted on the vehicle.

4. DESCRIPTION OF INITIALIZATION

- a. During initialization, the tire pressure warning valve and transmitters measure the inflation pressure of the tires, and register the signals that are transmitted into the tire pressure warning ECU at a frequency of once per 3 minute. The initialization process is completed when signals from all tires (except the spare tire) have been received.
- b. Perform initialization in the following cases:

1. Before delivery of a new vehicle.
2. After replacement of the tire pressure warning ECU*.
3. After replacement of a tire pressure warning valve and transmitter*.
4. When the specified tire pressure changes due to the use of a different size or type of tire.

HINT:

*: Perform initialization after the transmitter ID registration is completed.

5. FUNCTION OF MAIN COMPONENTS

Component	Function
Tire Pressure Warning ECU	• Receives the data from the tire pressure warning antenna and receiver and monitors the tire pressure. • When the tire pressure warning ECU detects a drop in the tire pressure, a system malfunction, or initialization mode, it outputs the respective signal to the combination meter assembly.
Tire Pressure Warning	Detects the pressure and internal temperature of the tire and transmits the measured

Valve and Transmitter	values and the ID code to the tire pressure warning antenna and receiver.
Tire Pressure Warning Antenna and Receiver	Receives the tire pressure warning valve and transmitter signal and transmits this data to the tire pressure warning ECU.
Tire Pressure Warning Reset Switch	The appropriate air pressures of the tires currently mounted on the vehicle are stored in the tire pressure warning ECU by operating the tire pressure warning reset switch.
Combination Meter Assembly	Transmits the vehicle speed signal to the tire pressure warning ECU.
Tire Pressure Warning Light	• Illuminates or turns on after blinking for 1 minute to warn the driver in accordance with the signal from the tire pressure warning ECU. • Displays 2-digit Diagnostic Trouble Codes

	(DTC).
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HOW TO PROCEED WITH TROUBLESHOOTING

HOW TO PROCEED WITH TROUBLESHOOTING

HINT:

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

1. VEHICLE BROUGHT TO WORKSHOP

NEXT: Go to next step

2. CUSTOMER PROBLEM ANALYSIS

- 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.

NEXT: Go to next step

3. ADJUST TIRE PRESSURE*

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- Read the "ID Tire Inflation Pressure" values.
- Adjust all tire pressures to the standard values. Refer to **INSPECTION** .
- Check the Data List. Refer to **DATA LIST / ACTIVE TEST**.

HINT:

- It takes up to 5 or 6 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	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. Refer to **DTC CHECK / CLEAR.**

RESULT

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

B --> Go to step 6

A: Go to next step

5. DTC CHART

- a. Refer to **DIAGNOSTIC TROUBLE CODE CHART.**

NEXT --> Go to step 8

6. PROBLEM SYMPTOMS TABLE

- a. Refer to **PROBLEM SYMPTOMS TABLE.**

NEXT: Go to next step

7. CIRCUIT INSPECTION*

- a. Refer to the Electronic Circuit Inspection Procedure. Refer to **ELECTRONIC CIRCUIT INSPECTION PROCEDURE** .

NEXT: Go to next step

8. REPAIR OR REPLACE

- a. Repair or replace parts based on the diagnosis result.

NEXT: Go to next step

9. CONFIRMATION TEST*

- a. Check the Data List to confirm that the tire inflation pressure data has been received. Refer to **DATA LIST / ACTIVE TEST**.
- b. Perform initialization. Refer to **INITIALIZATION**.
- c. Confirm that the initialization has been completed.

NEXT --> END

REGISTRATION

REGISTRATION

1. BEFORE REGISTRATION

NOTE: **The transmitter ID is written on the tire pressure warning valve and transmitter. It is not possible to read the transmitter ID after installing the tire onto the wheel. Therefore, make a note of the transmitter ID before installing the tire.**

- a. In case of tire pressure warning ECU replacement:
 1. Read the registered transmitter IDs that are stored in the old ECU using the Techstream and note them down.
 2. If reading the 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 valve and transmitters.
- b. In case of tire pressure warning valve and transmitter replacement:
 1. Take a note of the 8 digit number (transmitter ID) written on the tire pressure warning valve and transmitter.

2. REGISTER TRANSMITTER ID (USING THE TECHSTREAM)

HINT:

- The previously registered IDs will be cleared from memory when the registration is completed.
- If the ID registration step is not completed within 300 seconds, ID registration will be canceled.

- a. Set the air pressure of all tires to the specified value(s). Refer to **INSPECTION** .
- b. Turn the ignition switch off.
- c. Connect the Techstream to the DLC3.
- d. Turn the ignition switch to ON.
- e. Turn the Techstream on.
- f. Enter the following menus: Chassis / Tire Pressure Monitor / Utility / ID Registration.
- g. Perform the procedure displayed on the Techstream.

3. CONFIRMATION OF TRANSMITTER ID REGISTRATION

NOTE:

- It may take up to 5 or 6 minutes to update the tire pressure data. If the values are not displayed after a few minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24. Refer to DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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 stored in the tire pressure warning ECU after 3 minutes or more.
- If normal pressure values are displayed, the IDs have been registered correctly.
- If the tire pressure values are not displayed after several minutes, the IDs may be incorrect or the system may have a malfunction.
- After all IDs are registered, DTC C2126/26 is stored 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 signals from all the transmitters whose IDs are stored in the ECU, DTC C2126/26 is cleared and the tire pressure warning light goes off.

- a. Enter the following menus: Chassis / Tire Pressure Monitor / Data List.
- b. Read the "ID Tire Inflation Pressure" values.
- c. Confirm that the tire pressure data of all tires (except the spare tire) is displayed on the Techstream screen.

INITIALIZATION

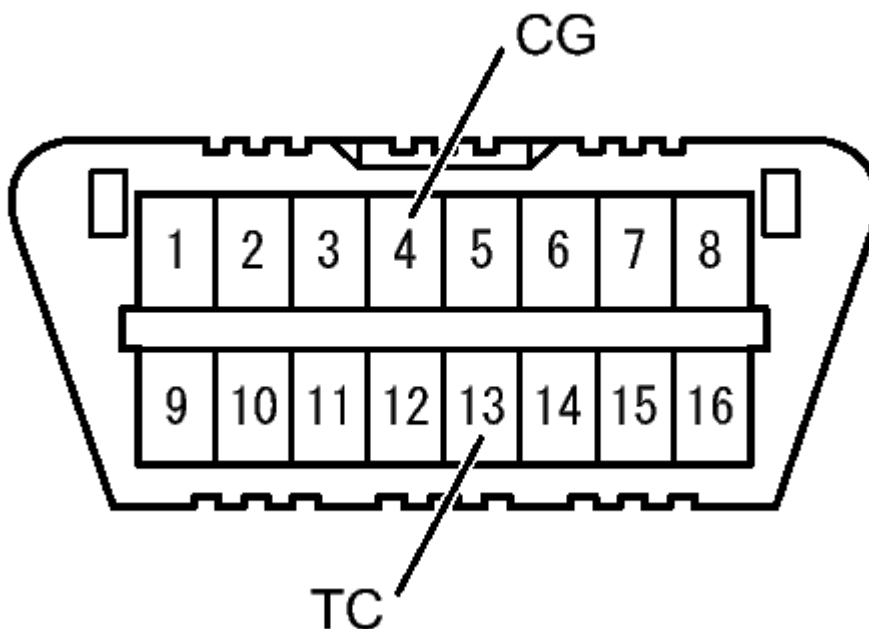
INITIALIZATION

NOTE:

- Initialization can be confirmed through the tire pressure warning light.

- The order in which the data is received is random.
- If the signals from all the wheels are received, initialization is completed.
- Initialization is completed when the Data List "ID Tire Inflation Pressure" display shows the correct pressures. Refer to DATA LIST / ACTIVE TEST.
- Initialization is normally completed within 5 or 6 minutes.
- It may take up to 5 or 6 minutes until the values are displayed. If the values are not displayed after several minutes, perform troubleshooting according to the inspection procedure for DTCs C2121/21 to C2124/24. Refer to DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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 initialization has not been completed successfully, DTC C2177/77 is stored after a vehicle speed of 8 km/h (5 mph) or more continues for 20 minutes or more.
- During test mode (sensor check mode), the system will not change to initialization mode even if the tire pressure warning reset switch is pushed.
- Initialization can be terminated by connecting terminals 13 (TC) and 4 (CG) of the DLC3.

*a



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Fig. 5: Identifying DLC3 Connector Terminals

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

TEXT IN ILLUSTRATION

*a	Front view of DLC3
----	-----------------------------

1. BEFORE INITIALIZATION

- a. Make sure that the tires are cold.
- b. Set the air pressure of all tires to the specified value(s). Refer to **INSPECTION** .

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

TEST MODE PROCEDURE

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 the 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 Techstream 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.

- When signal check returns to normal mode, all the signal check DTCs will be erased.
 - a. Turn the ignition switch off.
 - b. Connect the Techstream to the DLC3.
 - c. Turn the ignition switch to ON.
 - d. Turn the Techstream on.
 - e. 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.

- 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 each valve core and rapidly reduce the pressure (at least 40kPa within 30 second) to check the transmitter data (C2181/81 to C2184/84).
- h. Check that the tire pressure warning system test mode DTCs are erased.

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

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

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.

Condition	Procedure
Test mode DTC is	Repair the faulty part and enter

output	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 Techstream.

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 appropriate information below.

DTC Code	Detection Item	Trouble Area	See
C2181/81	Transmitter ID1 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC C2181/81: Transmitter ID1 not Received (Test Mode DTC); DTC C2182/82: Transmitter ID2 not</u>

		ECU	<u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2183/83:</u> <u>Transmitter</u> <u>ID3 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2184/84:</u> <u>Transmitter</u> <u>ID4 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC)</u>
C2182/82	Transmitter ID2 not received	• Tire pressure warning valve and transmitter • Tire pressure warning antenna and receiver • Harness or connector • Tire pressure warning ECU	Refer to <u>DTC</u> <u>C2121/21:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID1; DTC</u> <u>C2122/22:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID2; DTC</u> <u>C2123/23:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID3; DTC</u> <u>C2124/24:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID4; DTC</u> <u>C2181/81:</u> <u>Transmitter</u> <u>ID1 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2182/82:</u> <u>Transmitter</u> <u>ID2 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u>

			<u>C2183/83:</u> <u>Transmitter</u> <u>ID3 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2184/84:</u> <u>Transmitter</u> <u>ID4 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC)</u>
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	Refer to <u>DTC</u> <u>C2121/21:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID1; DTC</u> <u>C2122/22:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID2; DTC</u> <u>C2123/23:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID3; DTC</u> <u>C2124/24:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID4; DTC</u> <u>C2181/81:</u> <u>Transmitter</u> <u>ID1 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2182/82:</u> <u>Transmitter</u> <u>ID2 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2183/83:</u> <u>Transmitter</u> <u>ID3 not</u>

			<u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2184/84:</u> <u>Transmitter</u> <u>ID4 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC)</u>
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	Refer to <u>DTC</u> <u>C2121/21:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID1; DTC</u> <u>C2122/22:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID2; DTC</u> <u>C2123/23:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID3; DTC</u> <u>C2124/24:</u> <u>No Signal</u> <u>from</u> <u>Transmitter</u> <u>ID4; DTC</u> <u>C2181/81:</u> <u>Transmitter</u> <u>ID1 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2182/82:</u> <u>Transmitter</u> <u>ID2 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u> <u>C2183/83:</u> <u>Transmitter</u> <u>ID3 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC); DTC</u>

			<u>C2184/84:</u> <u>Transmitter</u> <u>ID4 not</u> <u>Received</u> <u>(Test Mode</u> <u>DTC)</u>
C2191/91	Vehicle speed signal error	• Meter / gauge system (speed signal) • Vehicle speed signal circuit • Harness or connector • Tire pressure warning ECU	Refer to <u>DTC C2174/74:</u> <u>Vehicle</u> <u>Speed Signal</u> <u>Malfunction;</u> <u>DTC</u> <u>C2191/91:</u> <u>Vehicle</u> <u>Speed Signal</u> <u>Error (Test</u> <u>Mode DTC)</u>

PROBLEM SYMPTOMS TABLE

PROBLEM SYMPTOMS TABLE

HINT:

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

TIRE PRESSURE WARNING SYSTEM

Symptom	Suspected Area	See
Tire pressure warning light does not illuminate, despite tire pressure decreasing	Initialization	Refer to <u>INITIALIZATION</u>
	Check Data List (Tire inflation pressure)	Refer to <u>DATA LIST / ACTIVE TEST</u>
	ID code check (Registration)	Refer to <u>REGISTRATION</u>
Tire pressure warning light illuminated (Goes off during initial check)	ECU power source circuit	Refer to <u>ECU Power Source Circuit</u>
	Tire pressure warning light circuit	Refer to <u>Tire Pressure Warning Light Circuit</u>
	Check Data List (Tire inflation pressure)	Refer to <u>DATA LIST / ACTIVE TEST</u>

Tire pressure warning light illuminated (Comes on during initial check)	Tire pressure warning light circuit	Refer to <u>Tire Pressure Warning Light Circuit</u>
	Tire pressure adjustment	Refer to <u>INSPECTION</u>
	ID code check (Registration)	Refer to <u>REGISTRATION</u>
Initialization cannot be done	Tire pressure reset switch circuit	Refer to <u>Tire Pressure Warning Reset Switch Circuit</u>
DTC check cannot be done	ECU power source circuit	Refer to <u>ECU Power Source Circuit</u>
	TC and CG terminal circuit	Refer to <u>TC and CG Terminal Circuit</u>

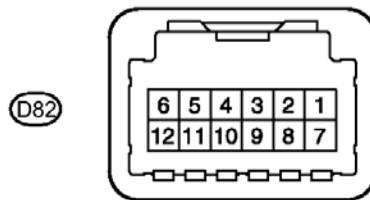
TERMINALS OF ECU

TERMINALS OF ECU

HINT:

Inspect the connectors from the back side.

1. CHECK TIRE PRESSURE WARNING ECU



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Fig. 6: Tire Pressure Warning ECU Connector Terminal Identification
Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

- Disconnect the K16 tire pressure warning antenna and receiver connector.
- Measure the voltage according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D82-12 (RDA) - D82-9 (GND)	G - BR	Tire pressure warning antenna and receiver signal	Ignition switch ON	11 to 14 V

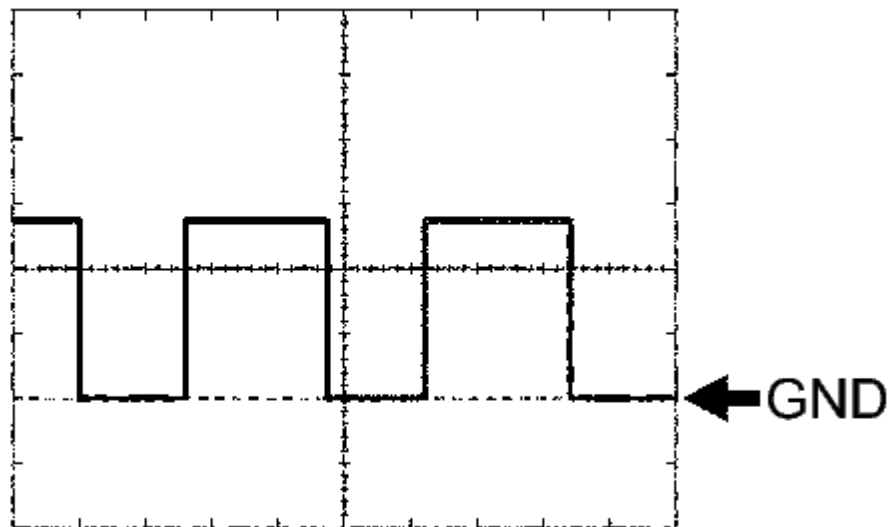
- Connect the K16 tire pressure warning antenna and receiver connector.
- Measure the voltage and resistance according to the value(s) in the table below.

Terminal No. (Symbol)	Wiring Color	Terminal Description	Condition	Specified Condition
D82-1 (CLSW) - D82-9 (GND)	L - BR	Tire pressure warning reset switch	Ignition switch ON Tire pressure warning reset switch off	8 to 14 V
			Ignition switch ON Tire pressure warning reset switch on	Below 1.5 V
D82-2 (SPD) - D82-9 (GND)	LG - BR	Vehicle speed signal	Vehicle is running	Pulse generation (see Fig. 7)
D82-3 (TC) - D82-9 (GND)	R - BR	TC terminal	When terminal TC is not connected	8 to 14 V
D82-5 (IND) - D82-9 (GND)	GR - BR	Tire pressure warning light output signal	After ignition switch is turned ON, when tire pressure warning light illuminates for 3 seconds	2.2 to 4.4 V
			Ignition switch ON Tire pressure warning light off	Below 0.5 V
D82-6 (RF5V) - D82-9 (GND)	R - BR	Tire pressure warning antenna and receiver power source	Ignition switch ON	11 to 14 V
D82-7 (IG) - D82-9 (GND)	L - BR	IG power source	Ignition switch ON	11 to 14 V
D82-9 (GND) - Body	BR - Body ground	Ground	Always	Below 1 ohms

ground				
D82-10 (SIL) - D82-9 (GND)	W - BR	Diagnosis tester communication line	Ignition switch ON, when communication is not performed with a tester	8 to 14 V
D82-11 (GND2) - D82-9 (GND)	Y - BR	Tire pressure warning antenna and receiver ground	Always	Below 1 ohms

If the result is not as specified, the ECU may have a malfunction.

- e. Using an oscilloscope, check the waveform 1.



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Fig. 7: Identifying Waveform 1

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

Item	Contents
Terminal No. (Symbol)	SPD - GND
Tool Setting	5 V/DIV., 200 ms/DIV.
	While driving

Vehicle Condition	at approximately 20 km/h (12 mph).
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DIAGNOSIS SYSTEM

DIAGNOSIS SYSTEM

1. CHECK WARNING LIGHT

NOTE:

- When there is a problem with the tire pressure warning system, the tire pressure warning light blinks at 0.5 second intervals, and comes on after 1 minute.
- When the malfunction has been corrected, the tire pressure warning light does not come on.
- When the tire pressure warning light comes on, immediately check the tire pressures of the tire and adjust it to the specified value(s).
- After turning the ignition switch to ON, the tire pressure warning light comes on for 3 seconds and then turns off. If the warning light does not come on for 3 seconds, proceed to the troubleshooting for the tire pressure warning light circuit. Refer to Tire Pressure Warning Light Circuit .

- a. Turn the ignition switch to ON.
- b. Check that the tire pressure warning light illuminates for 3 seconds.

2. WHAT TO CONSIDER WHEN TIRE PRESSURE WARNING LIGHT COMES ON

- a. When the tire pressure warning light does not go off, or when it comes on during driving, check the tire pressure. If the tire pressure warning light comes on within several hours after adjusting the tire pressure, the tire may have a slow air leak.
- b. The system will not operate under the following conditions (when the problem is corrected, operation will return to normal).
 1. Tires without a tire pressure warning valve and transmitter are used.
 2. A tire pressure warning valve and transmitter ID is not registered in the tire pressure warning ECU.
 3. The battery voltage of tire pressure warning valve and transmitter has dropped (battery life: 10 years).
- c. The system may not operate under the following conditions (when the problem is corrected, operation will return to normal).
 1. Facilities or devices that use similar radio frequencies are located in the vicinity of the vehicle.
 2. A radio device of similar frequencies is used in the vehicle.
 3. A type of film that affects radio waves is attached to the windows.

4. A large amount of snow or ice is stuck to the vehicle, especially onto the wheels and around the wheel wells.
5. Any wheels other than the specified ones are used.
6. Tire chains are used.

3. TIRE PRESSURE WARNING LIGHT AND INDICATOR CHART

HINT:

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

	Immediately after turning the power switch on (IG)	Always						
		Warning light output pattern						
		Goes off	Comes on	Blinks*1	Blinks*2	Blinks*3	Blinks*4	Outputs DTC
Normal	0	0	-	-	-	-	-	-
Low tire pressure	0	-	0	-	-	-	-	-
System failure	0	-	-	0	-	-	-	-
Test mode (signal check mode)	0	-	-	-	0	-	-	-
Initialization	0	-	-	-	-	0	-	-
ECU connector poorly connected	-	-	-	0 (*5)	-	-	-	-
TC grounded (DTC is output)	0	-	-	-	-	-	-	0
TC grounded (DTC is not output)	0	-	-	-	-	-	0	-

*1: Comes on and goes off repeatedly at 0.5 second intervals, and comes on after 1 minute.

*2: Comes on and goes off repeatedly at 0.125 second intervals.

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

*4: Comes on and goes off repeatedly at 0.25 second intervals.

*5: When there is a open circuit, the light is off for 10 seconds. Then it blinks at 0.5 second intervals, and turns on after 1 minute.

4. Normal mode DTCs

- a. DTCs are stored in the tire pressure warning ECU and output by the blinking of tire pressure warning light or by using the Techstream. Refer to **DTC CHECK / CLEAR**.

5. Test mode (signal check mode) DTCs

- a. By switching from normal mode into test mode (signal check mode) (input signal check), you can

inspect the tire pressure warning antenna and receiver, each tire pressure warning valve and transmitter, and vehicle speed sensor signal. Refer to **TEST MODE PROCEDURE**.

6. 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 to inform the driver of the system failure.
- b. The result of this diagnosis code is stored in the tire pressure warning ECU.

DTC CHECK / CLEAR

DTC CHECK / CLEAR

1. CHECK DTC (USING TECHSTREAM)

- a. Turn the ignition switch off.
- b. Connect the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes
- f. Read the DTCs following the prompts on the Techstream screen.

HINT:

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

2. CHECK DTC (USING SST CHECK WIRE)

- a. Turn the ignition switch off.
- b. Using SST, connect terminals 13 (TC) and 4 (CG) of the DLC3.
 - **SST: 09843-18040**

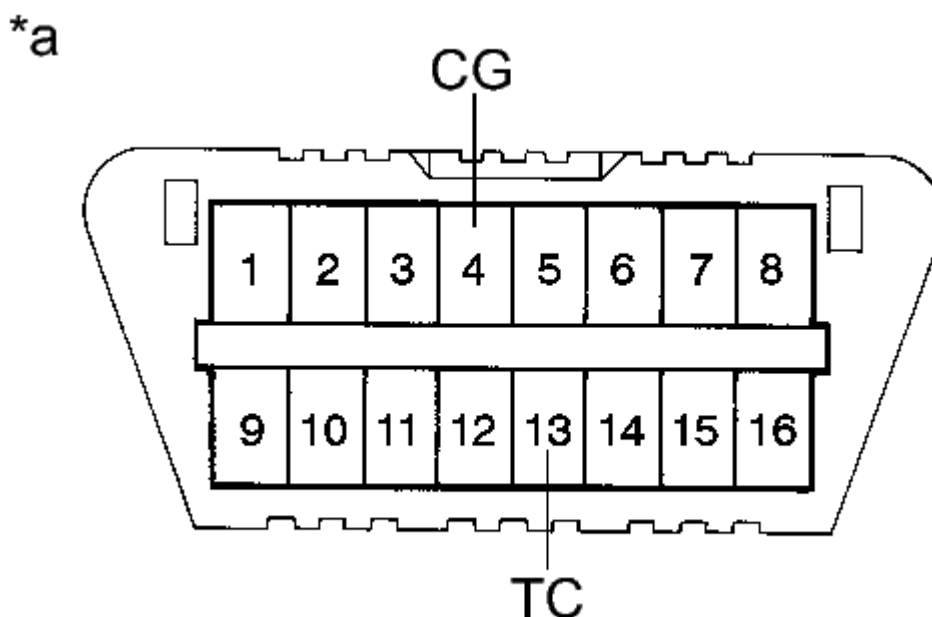


Fig. 8: DLC3 Connector Terminal Identification
 Courtesy of TOYOTA MOTOR SALES, U.S.A., INC.

c. **TEXT IN ILLUSTRATION**

*a	Front view of DLC3
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- d. Read and record any DTCs from the tire pressure warning light on the combination meter.

HINT: Turn the ignition switch to ON

- 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.

Trouble Area	See
Tire pressure warning light circuit	Refer to <u>Tire Pressure Warning Light Circuit</u>
TC and CG terminal	Refer to <u>TC and CG</u>

circuit	Terminal
	<u>Circuit</u>

HINT:

- If the AWD warning light does not blink, perform relevant troubleshooting procedures. The relevant troubleshooting procedures are in the information listed in the table below.
 - When the system is operating correctly, each light will blink continuously in a pattern of 0.25 seconds on, then 0.25 seconds off.
 - When one DTC is output, each lamp will output the same code at 4 second intervals. (For example, Code 21 would be output as 2 flashes, a 1.5-second pause, and then 1 flash).
 - When 2 or more DTCs are output, each lamp will output a different code at 2.5-second intervals, and when all codes have been output, there will be a 4-second pause and the sequence will repeat.
 - When multiple codes are set, they are output in order starting with the lowest DTC number.
- 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 the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menus: Chassis / Tire Pressure Monitor / Trouble Codes
- f. Clear the DTCs following the prompts on the Techstream screen.

HINT:

Refer to Techstream operator's manual for further details.

DATA LIST / ACTIVE TEST

DATA LIST / ACTIVE TEST

1. READ DATA LIST

HINT:

Using the Techstream to read the Data List allows the values or states of switches, sensors, actuators and

other items to be read without removing any parts. This non-intrusive inspection can be very useful because intermittent conditions or signals may be discovered before parts or wiring is disturbed. Reading the Data List information early in troubleshooting is one way to save diagnostic time.

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

- a. Turn the ignition switch off.
- b. Connect the Techstream to the DLC3.
- c. Turn the ignition switch to ON.
- d. Turn the Techstream on.
- e. Enter the following menu items: Chassis / Tire Pressure Monitor / Data List.
- f. Check the values by referring to the table below.

TIRE PRESSURE MONITOR

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, 1, 2, 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.: FFFFFFFF*1	The transmitter ID registered in the transmitter ID1 is displayed	-
	Registered ID2 code/	The transmitter ID	

Registered ID2 Code	min.: 0 max.: FFFFFFFF*1	registered in the transmitter ID2 is displayed	-
Registered ID3 Code	Registered ID3 code/ min.: 0 max.: FFFFFFFF*1	The transmitter ID registered in the transmitter ID3 is displayed	-
Registered ID4 Code	Registered ID4 code/ min.: 0 max.: FFFFFFFF*1	The transmitter ID registered in the transmitter ID4 is displayed	-
Registered ID5 Code	-	-	-
ID Transmission Status	Transmitter ID transmission status / Finish or Now	Finish or Now	-
Initialization switch	Tire pressure warning reset switch/ ON or OFF	ON: Switch is pressed and held OFF: Switch is not pressed	-
Initialization SW Info	Tire pressure warning reset switch setting information/ With or Without	With or Without	-
	ID1 tire inflation pressure / min.: Absolute pressure / 100 kPa (1		If 100 kPa (1 kgf/cm ² ,

ID1 Tire Inflation Pressure	kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received*2.
ID2 Tire Inflation Pressure	ID2 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received*2.
	ID3 tire inflation pressure / min.: Absolute		

ID3 Tire Inflation Pressure	pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received*2.
ID4 Tire Inflation Pressure	ID4 tire inflation pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Actual tire inflation pressure	If 100 kPa (1 kgf/cm ² , 14 psi) is displayed for absolute pressure or 0 kPa (0 kgf/cm ² , 0 psi) is displayed for relative pressure, data has not been received*2.
ID5 Tire Inflation Pressure	-	-	-

ID1 Temperature in Tire	ID1 temperature in tire/ min.: -50°C (- 58°F), max.: 205°C (401°F)	Actual tire temperature	If -50°C (- 58°F) is displayed, the data has not been received.
ID2 Temperature in Tire	ID2 temperature in tire/ min.: -50°C (- 58°F), max.: 205°C (401°F)	Actual tire temperature	If -50°C (- 58°F) is displayed, the data has not been received.
ID3 Temperature in Tire	ID3 temperature in tire/ min.: -50°C (- 58°F), max.: 205°C (401°F)	Actual tire temperature	If -50°C (- 58°F) is displayed, the data has not been received.
ID4 Temperature in Tire	ID4 temperature in tire/ min.: -50°C (- 58°F), max.: 205°C (401°F)	Actual tire temperature	If -50°C (- 58°F) is displayed, the data has not been received.
ID5 Temperature in Tire	-	-	-
ID1 Battery Voltage	ID1 battery voltage/ Over or Less	Over	-
ID2 Battery Voltage	ID2 battery voltage/ Over or Less	Over	-
ID3 Battery Voltage	ID3 battery voltage/ Over or Less	Over	-
ID4 Battery Voltage	ID4 battery voltage/ Over or Less	Over	-
ID5 Battery Voltage	-	-	-
	ID1 initial		

ID1 Initial Threshold of Low- pressure	threshold of low pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Tire pressure after initialization	-
ID2 Initial Threshold of Low- pressure	ID2 initial threshold of low pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² ,	Tire pressure after initialization	-

	51 psi)		
ID3 Initial Threshold of Low-pressure	ID3 initial threshold of low pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure / 349.35 kPa (3.6 kgf/cm ² , 51 psi)	Tire pressure after initialization	-
ID4 Initial Threshold of Low-pressure	ID4 initial threshold of low pressure / min.: Absolute pressure / 100 kPa (1 kgf/cm ² , 14 psi), Relative pressure / 0 kPa (0 kgf/cm ² , 0 psi) max.: Absolute pressure / 449.35 kPa (4.6 kgf/cm ² , 65 psi), Relative pressure /	Tire pressure after initialization	-

	349.35 kPa (3.6 kgf/cm ² , 51 psi)		
ID5 Initial Threshold of Low- pressure	-	-	-
Number of DTC	Number of DTCs recorded/ min.: 0 max.: 255	0	-

HINT:

*1: Displayed only when the transmitter ID is not registered.

*2: It may take up to 5 or 6 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. Refer to **DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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 the 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.

- Turn the ignition switch off.
- Connect the Techstream to the DLC3.
- Turn the ignition switch to ON.
- Turn the Techstream on.
- Enter the following menus: Body Electrical / Combination Meter / Active Test.
- According to the display on the Techstream, perform the Active Test.

COMBINATION METER

Tester	Test	Control	Diagnostic
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Display	Part	Range	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

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 appropriate information below.

TIRE PRESSURE WARNING SYSTEM

DTC Code	Detection Item	Trouble Area	See
C2111/11	Transmitter ID1 Operation Stop	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2111/11:</u> <u>Transmitter ID1 Operation</u> <u>Stop; DTC C2112/12:</u> <u>Transmitter ID2 Operation</u> <u>Stop; DTC C2113/13:</u> <u>Transmitter ID3 Operation</u> <u>Stop; DTC C2114/14:</u> <u>Transmitter ID4 Operation</u> <u>Stop</u>
C2112/12	Transmitter ID2 Operation Stop	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2111/11:</u> <u>Transmitter ID1 Operation</u> <u>Stop; DTC C2112/12:</u> <u>Transmitter ID2 Operation</u> <u>Stop; DTC C2113/13:</u> <u>Transmitter ID3 Operation</u> <u>Stop; DTC C2114/14:</u> <u>Transmitter ID4 Operation</u> <u>Stop</u>
C2113/13	Transmitter ID3 Operation Stop	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2111/11:</u> <u>Transmitter ID1 Operation</u> <u>Stop; DTC C2112/12:</u> <u>Transmitter ID2 Operation</u> <u>Stop; DTC C2113/13:</u> <u>Transmitter ID3 Operation</u> <u>Stop; DTC C2114/14:</u> <u>Transmitter ID4 Operation</u> <u>Stop</u>

C2114/14	Transmitter ID4 Operation Stop	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2111/11: Transmitter ID1 Operation Stop</u> ; <u>DTC C2112/12: Transmitter ID2 Operation Stop</u> ; <u>DTC C2113/13: Transmitter ID3 Operation Stop</u> ; <u>DTC C2114/14: Transmitter ID4 Operation Stop</u>
C2121/21	No Signal from Transmitter ID1	- Tire pressure warning valve and transmitter - Tire pressure warning antenna and receiver - Harness or connector - Tire pressure warning ECU	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1</u> ; <u>DTC C2122/22: No Signal from Transmitter ID2</u> ; <u>DTC C2123/23: No Signal from Transmitter ID3</u> ; <u>DTC C2124/24: No Signal from Transmitter ID4</u> ; <u>DTC C2181/81: Transmitter ID1 not Received (Test Mode DTC)</u> ; <u>DTC C2182/82: Transmitter ID2 not Received (Test Mode DTC)</u> ; <u>DTC C2183/83: Transmitter ID3 not Received (Test Mode DTC)</u> ; <u>DTC C2184/84: Transmitter ID4 not Received (Test Mode DTC)</u>
C2122/22	No Signal from Transmitter ID2	- Tire pressure warning valve and transmitter - Tire pressure warning antenna and receiver - Harness or connector - Tire pressure warning ECU	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1</u> ; <u>DTC C2122/22: No Signal from Transmitter ID2</u> ; <u>DTC C2123/23: No Signal from Transmitter ID3</u> ; <u>DTC C2124/24: No Signal from Transmitter ID4</u> ; <u>DTC C2181/81: Transmitter ID1 not Received (Test Mode DTC)</u> ; <u>DTC C2182/82: Transmitter ID2 not Received (Test Mode DTC)</u> ; <u>DTC C2183/83: Transmitter ID3 not Received (Test Mode DTC)</u> ; <u>DTC C2184/84: Transmitter ID4 not Received (Test Mode DTC)</u>

			<u>Received (Test Mode DTC)</u>
C2123/23	No Signal from Transmitter ID3	- Tire pressure warning valve and transmitter - Tire pressure warning antenna and receiver - Harness or connector - Tire pressure warning ECU	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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)</u>
C2124/24	No Signal from Transmitter ID4	- Tire pressure warning valve and transmitter - Tire pressure warning antenna and receiver - Harness or connector - Tire pressure warning ECU	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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)</u>
C2126/26	Transmitter ID not Received in Main Mode	- ID registration failure - Tire pressure warning valve and transmitter - Tire pressure warning antenna and receiver - Harness or connector	Refer to <u>DTC C2126/26: Transmitter ID not Received in Main Mode</u>

		- Tire pressure warning ECU	
C2141/41	Transmitter ID1 Error	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2141/41: Transmitter ID1 Error;</u> <u>DTC C2142/42: Transmitter ID2 Error;</u> <u>DTC C2143/43: Transmitter ID3 Error;</u> <u>DTC C2144/44: Transmitter ID4 Error</u>
C2142/42	Transmitter ID2 Error	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2141/41: Transmitter ID1 Error;</u> <u>DTC C2142/42: Transmitter ID2 Error;</u> <u>DTC C2143/43: Transmitter ID3 Error;</u> <u>DTC C2144/44: Transmitter ID4 Error</u>
C2143/43	Transmitter ID3 Error	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2141/41: Transmitter ID1 Error;</u> <u>DTC C2142/42: Transmitter ID2 Error;</u> <u>DTC C2143/43: Transmitter ID3 Error;</u> <u>DTC C2144/44: Transmitter ID4 Error</u>
C2144/44	Transmitter ID4 Error	- Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2141/41: Transmitter ID1 Error;</u> <u>DTC C2142/42: Transmitter ID2 Error;</u> <u>DTC C2143/43: Transmitter ID3 Error;</u> <u>DTC C2144/44: Transmitter ID4 Error</u>
C2165/65	Abnormal Temperature Inside ID1 Tire	- Tires - Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>DTC C2165/65: Abnormal Temperature Inside ID1 Tire;</u> <u>DTC C2166/66: Abnormal Temperature Inside ID2 Tire;</u> <u>DTC C2167/67: Abnormal Temperature Inside ID3 Tire;</u> <u>DTC C2168/68: Abnormal Temperature Inside ID4 Tire</u>
			Refer to <u>DTC C2165/65: Abnormal Temperature</u>

C2166/66	Abnormal Temperature Inside ID2 Tire	- Tires - Tire pressure warning valve and transmitter - Tire pressure warning ECU	<u>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</u>
C2167/67	Abnormal Temperature Inside ID3 Tire	- Tires - Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>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</u>
C2168/68	Abnormal Temperature Inside ID4 Tire	- Tires - Tire pressure warning valve and transmitter - Tire pressure warning ECU	Refer to <u>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</u>
C2171/71	Transmitter ID not Registered	Tire pressure warning ECU	Refer to <u>DTC C2171/71: Transmitter ID not Registered</u>
C2174/74	Vehicle Speed Signal Malfunction	- Combination meter - Vehicle speed signal circuit - Harness or connector - Tire pressure warning ECU - Tire pressure warning valve and transmitter	Refer to <u>DTC C2174/74: Vehicle Speed Signal Malfunction; DTC C2191/91: Vehicle Speed Signal Error (Test Mode DTC)</u>
C2176/76	Receiver Error	Tire pressure warning ECU	Refer to <u>DTC C2176/76: Receiver Error</u>
		- Tire pressure warning valve and transmitter - Tire pressure warning	Refer to <u>DTC C2177/77:</u>

C2177/77	Initialization not Completed	ECU - Tire pressure warning antenna and receiver - Harness or connector	<u>Initialization not Completed</u>
C2178/78	Battery Voltage Malfunction	- Battery - Charging system - Tire pressure warning ECU	Refer to <u>DTC C2178/78: Battery Voltage Malfunction</u>
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	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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)</u>
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	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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)</u>

			<u>Received (Test Mode DTC)</u>
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	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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)</u>
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	Refer to <u>DTC C2121/21: No Signal from Transmitter ID1; DTC C2122/22: No Signal from Transmitter ID2; DTC C2123/23: No Signal from Transmitter ID3; DTC C2124/24: No Signal from Transmitter ID4; DTC 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)</u>
C2191/91	Vehicle Speed Signal Error (Test Mode DTC)	- Meter / gauge system (speed signal) - Vehicle speed signal circuit - Harness or connector - Tire pressure warning	Refer to <u>DTC C2174/74: Vehicle Speed Signal Malfunction; DTC C2191/91: Vehicle Speed Signal Error (Test Mode DTC)</u>

