

TIRE AND WHEEL SYSTEM

INSPECTION

1. INSPECT TIRE

- (a) Check the tires for wear and proper inflation pressure.

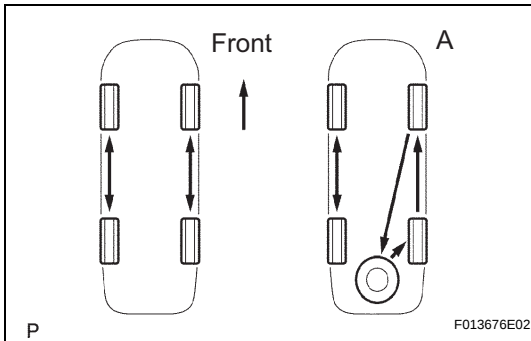
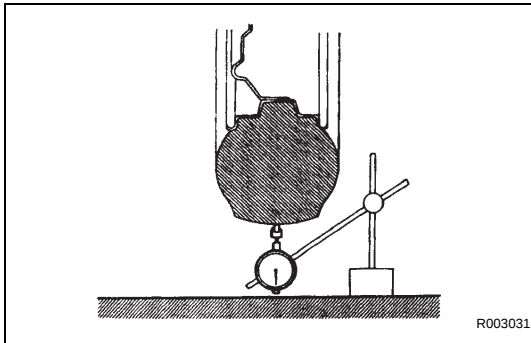
Cold tire inflation pressure

Tire size	Front kPa (kgf/cm ² , psi)	Rear kPa (kgf/cm ² , psi)
225/65R17 101S P235/55R18 99V	210 (2.1, 30)	210 (2.1, 30)

- (b) Using a dial indicator, check the tire runout.

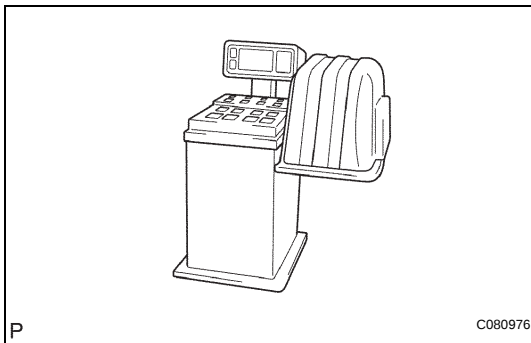
Tire runout:

1.0 mm (0.039 in.) or less



2. ROTATE TIRES

- (a) Rotate tires as shown in the illustration.
- (b) Rotate as shown in (A) if the spare tire is included in the rotation.



3. INSPECT WHEEL BALANCE

- (a) Check and adjust the Off-the-car balance.
- (b) If necessary, check and adjust the On-the-car balance.

Imbalance after adjustment:

8.0 g (0.018 lb) or less

4. INSPECT BEARING BACKLASH
5. INSPECT BEARING BACKLASH
6. INSPECT AXLE HUB DEVIATION
7. INSPECT AXLE HUB DEVIATION

TIRE PRESSURE WARNING SYSTEM

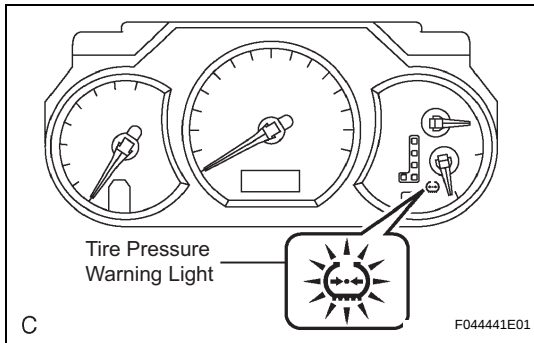
PRECAUTION

1. PRECAUTION

NOTICE:

When disconnecting the negative (-) terminal cable of the battery, initialize the following systems after the completion of the operation.

System Name	See procedure
Lighting System (Adaptive Front Lighting System)	LI-17
Power Window System	WS-12
Power Back Door System	ED-33
Sliding Roof System	RF-4



2. TIRE PRESSURE WARNING SYSTEM PRECAUTION

- When the tire pressure warning light comes on, immediately check the air pressure of the tire and adjust it to the specified pressure (See page [TW-1](#)). When the ignition switch is turned OFF, the tire pressure warning light goes off.
- This system requires initializing after changing tires or wheels and rotating the tires (See page [TW-2](#)).
- In the following cases, the system may not operate normally.
 - The vehicle speed is at 30 km/h (19 mph) or less.
 - Tire size is different from that which is specified.
 - Different sizes or types of tires are used simultaneously.
 - A spare tire, snow tires or chains are used.
 - The vehicle is driven on the unpaved, extremely rough or slippery road.
 - One of the tires on the vehicle is extremely worn or new.

3. FAIL-SAFE FUNCTION

- When a system malfunction occurs in the tire pressure warning system, the tire pressure warning light blinks.

NOTICE:

If the malfunction returns to normal, the tire pressure warning light does not blink.

- The result of this diagnosis is stored in the skid control ECU.

HOW TO PROCEED WITH TROUBLESHOOTING

The intelligent tester can be used at step 3, 5, 8 and 11.

1 VEHICLE BROUGHT TO WORKSHOP

NEXT

2 CUSTOMER PROBLEM ANALYSIS

NEXT

3 CHECK MULTIPLEX COMMUNICATION SYSTEM

(a) Check that DTC is output.



DTC IS OUTPUT (PROCEED TO "MULTIPLEX COMMUNICATION SYSTEM")



DTC IS NOT OUTPUT (Go to step 4)

4 CHECK TIRE PRESSURE WARNING LIGHT CONDITION

- (a) Turn the ignition switch to the ON position.
- (b) Record the condition of the tire pressure warning light on the combination meter assembly.
- (c) Refer to the "TIRE PRESSURE WARNING DISPLAY FUNCTION" section of the "PRE-CHECK" for checking the condition of the tire pressure warning light (See page [TW-8](#)).

NEXT

5 DTC CHECK

- (a) DTC13 (ABS system malfunction) will not be output, if the check is performed by the intelligent tester.



NO DTC PRESET (Go to step 6)



DTC PRESET (Go to step 8)

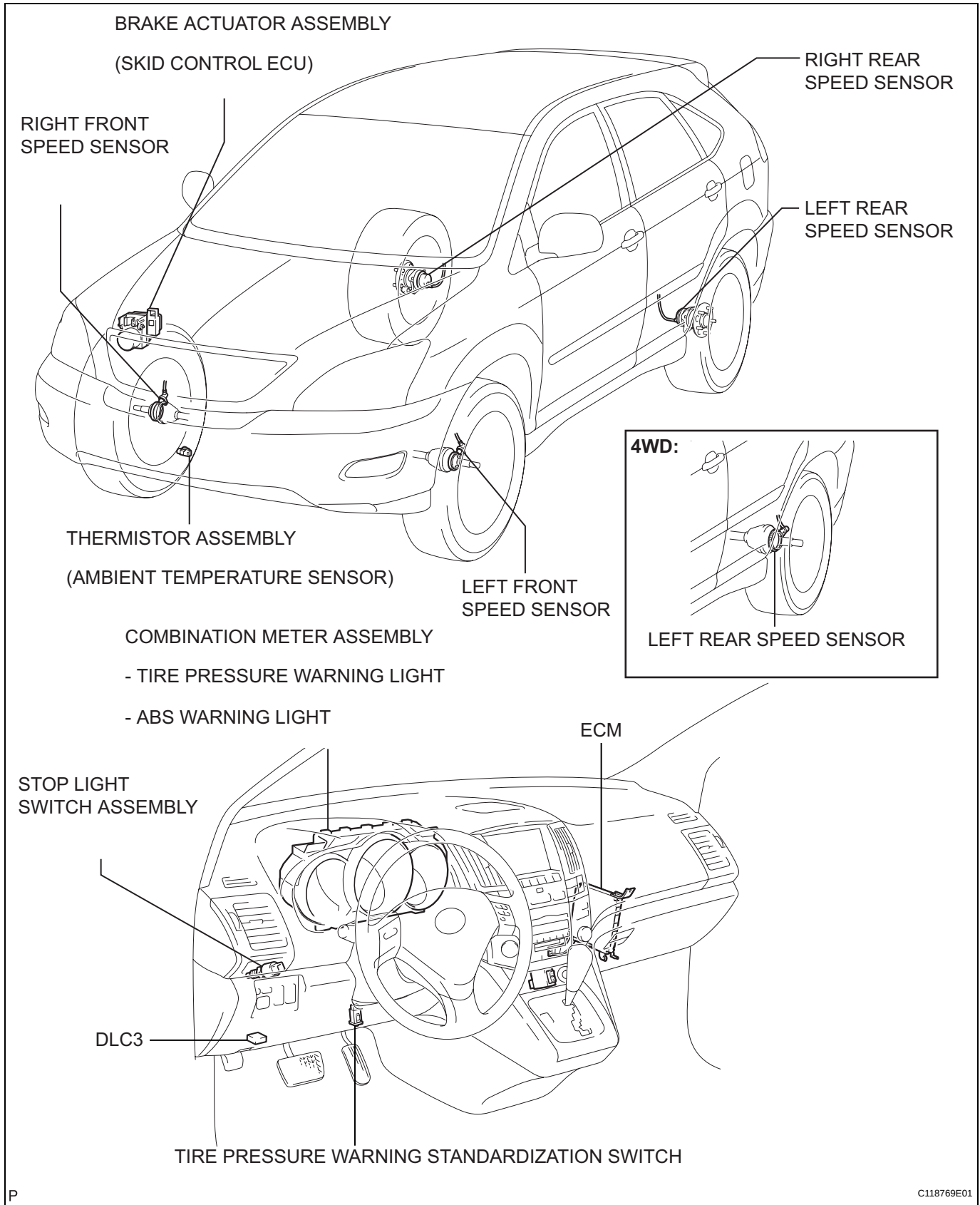
6 PROBLEM SYMPTOMS TABLE



Go to step 8

7	DTC CHART
NEXT	
8	CIRCUIT INSPECTION
NEXT	
9	IDENTIFICATION OF PROBLEM
NEXT	
10	REPAIR
NEXT	
11	CONFIRMATION TEST
NEXT	
END	

PARTS LOCATION



SYSTEM DESCRIPTION

1. TIRE PRESSURE WARNING SYSTEM DESCRIPTION

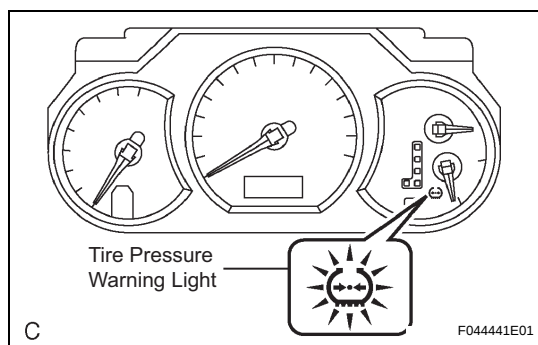
- (a) The tire pressure warning system informs the driver if it detects a low tire pressure. When the tire pressure warning system detects low tire pressure, which affects safe driving in any of the 4 wheels, the tire pressure warning light comes on.

HINT:

When the ignition switch is OFF, the tire pressure warning light goes off. However, when the ignition switch is turned ON again, and the vehicle is driven at more than 30 km/h (19 mph), the tire pressure warning light comes on again.

2. TIRE PRESSURE WARNING DISPLAY FUNCTION

- (a) The tire pressure warning light comes on, according to the condition of the tire pressure warning system, as shown in the table on the PRE-CHECK (See page [TW-8](#)).



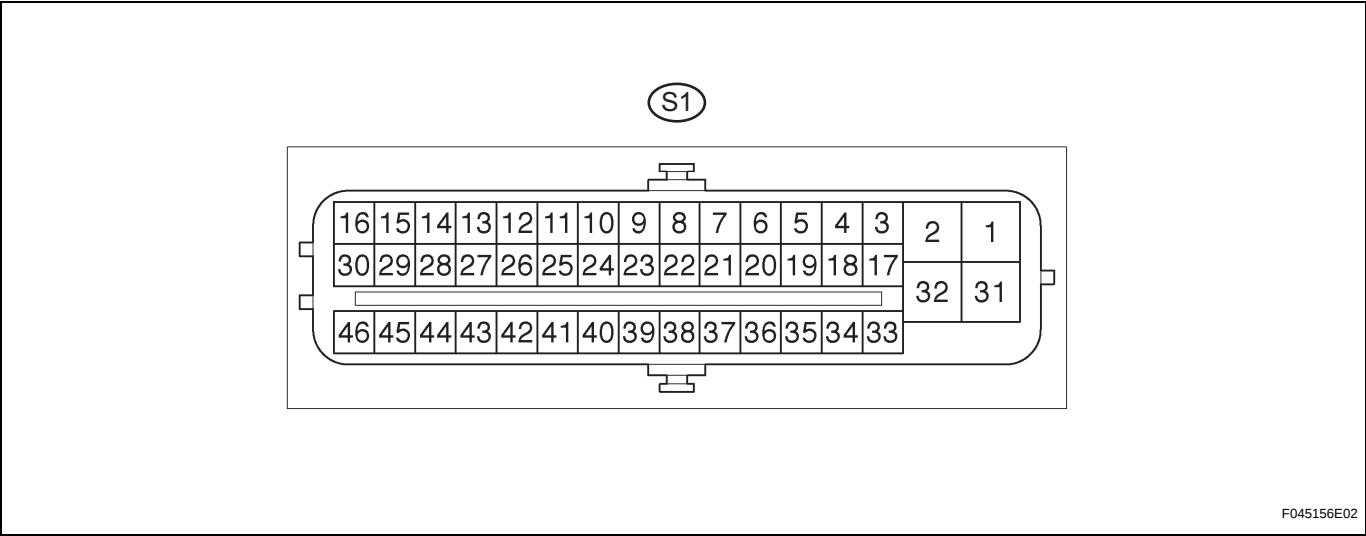
PROBLEM SYMPTOMS TABLE

TIRE PRESSURE WARNING SYSTEM

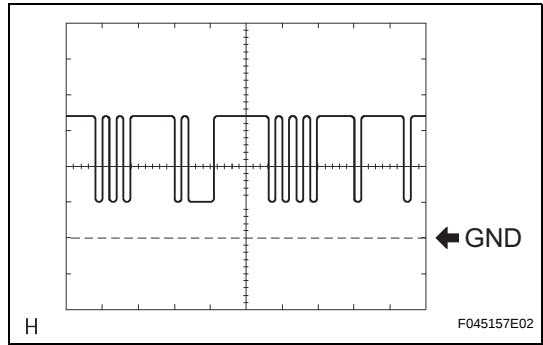
Symptom	Suspected area	See page
Tire pressure warning light does not come on after ignition switch is turned ON.	1. Check multiplex communication system	MP-6
	2. Tire pressure warning light circuit	TW-24
	3. Brake actuator assembly	-
Tire pressure warning light remains on after ignition switch is turned ON.	1. Tire pressure warning light circuit	TW-24
	2. Brake actuator assembly	-
Tire pressure warning light blinks at 0.5 second intervals.	1. Check the DTCs for the ABS system.	BC-3
	2. Check the DTCs for the tire pressure warning system.	TW-17
	3. Brake actuator assembly	-
Tire pressure warning light blinks at 0.25 second intervals.	1. Initialize the tire pressure warning system (step 1.)	TW-8
	2. Brake actuator assembly	-
ECU is initialized (tire pressure warning switch is ON), but tire pressure warning light does not blink.	1. Check initialization	TW-8
	2. Tire pressure warning standardization switch circuit	TW-22
	3. Brake actuator assembly	-
Tire pressure warning light comes on while driving, but lamp goes off without supplying tire air pressure. *1	1. Check tire pressure warning light (step 3.)	TW-8
	2. Tire pressure warning light circuit	TW-24
	3. Brake actuator assembly	-
Tire pressure warning light comes on, but tire air pressure is in the standard value. *2	1. Check if vehicle wears appropriate size tire.	TW-1
	2. Ambient temperature sensor circuit	TW-26
	3. Tire pressure warning light circuit	TW-24
	4. Brake actuator assembly	-
Tire pressure warning light remains off, even when tire air pressure decreased. *3	1. Check if vehicle wears appropriate size tire.	TW-1
	2. Ambient temperature sensor circuit	TW-26
	3. Tire pressure warning light circuit	TW-24
	4. Brake actuator assembly	-
Tire pressure warning light comes on while driving, but light remains lit after correcting tire pressure.	1. Check tire pressure warning light (step3)	TW-8
	2. Tire pressure warning light circuit	TW-24
	3. Ambient temperature sensor circuit	TW-26
	4. Brake actuator assembly	-
DTC check cannot be completed.	1. Check DTCs for ABS system.	BC-21
	2. TC terminal circuit	-
	3. Tire pressure warning light circuit	TW-24
	4. Brake actuator assembly	-
Test mode cannot be completed.	1. Check the DTCs for the ABS system.	BC-21
	2. TS terminal circuit	-
	3. Brake actuator assembly	-

TERMINALS OF ECU

1. SKID CONTROL ECU

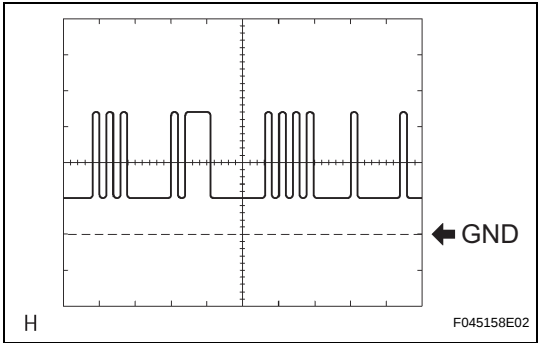


Symbols (Terminal No.)	Wiring Color	Terminal Description	Condition	Specified Condition
TRC+ (8) - TRC- (22)	BR - P	ECM communication output	Ignition switch ON	Pulse generation
ENG+ (9) - GND1 (32)	G - W-B	ECM serial communication line (+) input signal	Ignition switch ON and vehicle speed 30 km/h (19 mph) or more	Pulse generation 1 reference
D/G (13) - GND1 (32)	L-B - W-B	Diagnosis tester communication line	Ignition switch ON	10 to 14 V
ENG- (23) - GND1 (32)	L-B - W-B	ECM serial communication line (-) input signal	Ignition switch ON and engine idle speed	Pulse generation 2 reference
STP1 (27) GND1 (32) -	W - W-B	Stop light switch assembly input signal	Brake pedal depressed	10 to 14 V
			Brake pedal released	Below 1.5 V
GND1 (32) - Body ground	W-B - Body ground	Ground	Always	Below 1 Ω
INIT (41) GND1 (32)	L - W-B	Tire pressure warning standardization switch signal	Ignition switch ON and tire pressure warning switch ON	Below 3 V
			Ignition switch ON and tire pressure warning switch OFF	10 to 14 V



(a) Pulse generation 1:
Reference

Item	Condition
Terminal	ENG+ - GND1
Tool setting	1 V/DIV, 0.5 ms/DIV
Vehicle condition	Engine idle speed



(b) Pulse generation 2:
Reference

Item	Condition
Terminal	ENG- - GND1
Tool setting	1 V/DIV, 0.5 ms/DIV
Vehicle condition	Engine idle speed

DTC CHECK / CLEAR

1. DIAGNOSTIC SYSTEM

(a) Inspect the battery voltage.

Battery voltage:

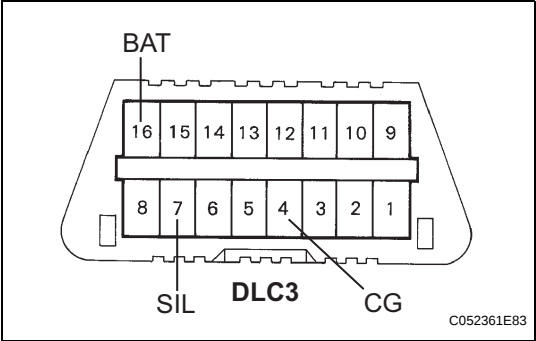
11 to 14 V

If voltage is below 11 V, recharge the battery before proceeding.

(b) Check the DLC3.

The vehicle's skid control ECU uses ISO 9141-2 for communication. The terminal arrangement of the DLC3 complies with SAE J1962 and matches with the ISO 9141-2 format.

Verify conditions listed in the table below:

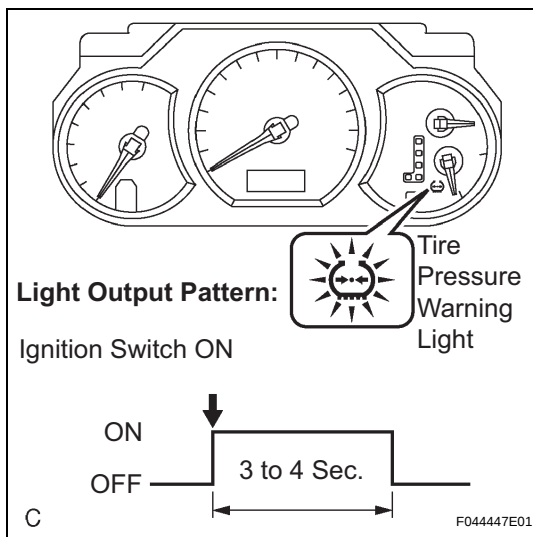


Terminal No.	Terminal name	Connection / Voltage or Resistance	Condition
7	SIL	Bus + Line / Pulse generation	During transmission
4	CG	Chassis Ground to Body Ground / 1 Ω or less	Always
16	BAT	Battery Positive to Body Ground / 10 to 14 V	Always

HINT:

If the intelligent tester displays "UNABLE TO CONNECT TO VEHICLE" when the cable of the intelligent tester is properly connected to the DLC3, the ignition switch is turned to the ON position and the tester is operated, there is either a problem on the vehicle side or tester side.

- If communication is normal when the tester is connected to another vehicle, inspect the DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tester itself. In this case, consult the Service Department listed in the tester's instruction manual.



2. CHECK WARNING LIGHT

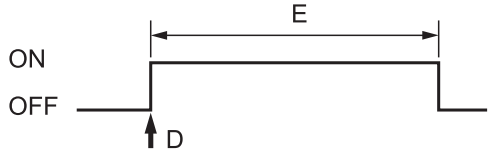
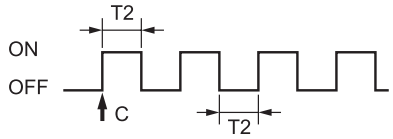
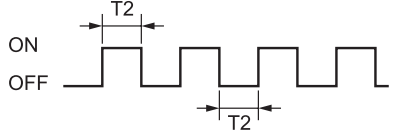
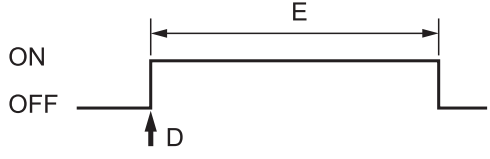
- Turn the ignition switch to the OFF position.
- When the ignition switch is turned to the ON position, the light should come on for 3 to 4 seconds and then go off.

HINT:

If the tire pressure warning light has a defect, check the tire pressure warning light output patterns and the problem symptoms table.

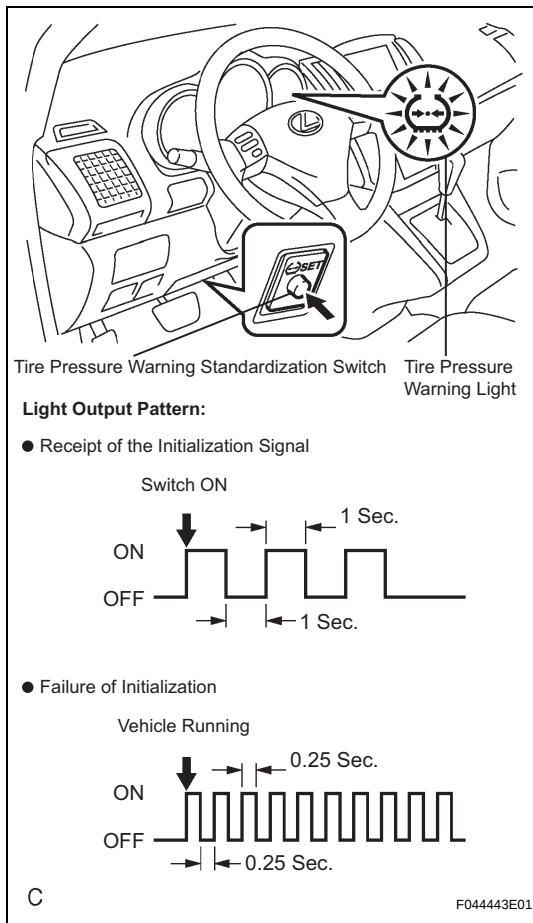
3. TIRE PRESSURE WARNING LIGHT CHART:

Priority	Condition	Tire Pressure Warning Light Output Pattern
1	Ignition switch is in the ON position	Tire pressure warning light comes on for 3 seconds when the ignition switch is turned to the ON position. (However, during initialization, the light comes on for 4 seconds.) ON OFF A T1 - T1: 3 or 4 sec. - A: Ignition switch ON
2	System abnormal 1 Tire pressure warning light signal is open. HINT: When the tire pressure warning light drive signal circuit opens due to a skid control ECU malfunction, communication error, open circuit in the wire harness, etc., the tire pressure warning light comes on. (Active Light Circuit)	Tire pressure warning light comes on ON OFF B B: Signal circuit open
3	System abnormal 2 ABS system malfunction Speed sensor malfunction Stop light switch assembly malfunction HINT: The skid control ECU monitors the speed sensor signal and the stop light switch signal, and the tire pressure warning light blinks.	The pressure warning light blinks (Goes on and off repeatedly at 0.5 second intervals.) ON OFF C T2 T2 - T2: 0.5 sec. - C: Malfunction Occurs HINT: When the skid control ECU detects a system abnormal 2 malfunction, check the ABS DTCs and proceed to the pages on which the ABS DTCs are described.

Priority	Condition	Tire Pressure Warning Light Output Pattern
4	Tire pressure warning reset switch is turned on during TEST mode. (Press and hold the tire pressure warning reset switch.)	Tire pressure warning light comes on when the tire pressure warning reset switch is turned on.  - E: Switch operating - D: Switch ON
5	Initialization mode is received. HINT: See step 3 for initialization procedure.	Tire pressure warning light blinks 3 times (Turning on and off repeatedly at 1 second intervals.)  - T2: 1 sec. - C: Switch ON
6	Failure to initialize when driving the vehicle. HINT: 3 conditions will indicate this pattern: 1. New vehicle from factory 2. ECM replacement 3. Failure to initialize	Tire pressure warning light blinks (Turning on and off repeatedly at 0.25 second intervals.)  T2: 0.25 sec.
7	Outputs tire air pressure check result. HINT: The result is output only when driving at 19 mph (35 km/h) or more.	Tire pressure is judged to be normal: Warning switch is OFF Tire pressure is judged to be low:  B: Judging low tire pressure

HINT:

When the skid control ECU does not operate properly, the ABS warning light comes on as an ABS system malfunction.



4. INITIALIZING THE TIRE PRESSURE WARNING SYSTEM

- Check and adjust the tire pressure to the specified value (See page TW-1). (Procedure "A")
- With the vehicle stopped, turn the ignition switch to the ON position. (Procedure "B")
- Press and hold the tire pressure warning standardization switch until the tire pressure warning light blinks 3 times at a 1 second interval. (Procedure "C")

HINT:

If the tire pressure warning light does not blink, perform the initialization again. (with the ignition switch off, perform the procedure above starting at procedure "B".)

- Drive the vehicle at 30 km/h (19 mph) or more, to complete the initialization of the skid control ECU. (It takes about 0.5 to 1.0 hour.) (Procedure "D")

HINT:

If the tire pressure warning light blinks at 0.25 second intervals while the vehicle is being driven, the initialization may have failed. If so, perform the initialization again. (Turn the ignition switch OFF and retry from procedure "A".)

- After initialization, is completed the skid control ECU monitors the tire pressure. Using the wheel speed sensors. (Procedure "E")
- To verify the system has been initialized check the length of time the tire pressure warning light is on after turning the ignition switch to the ON position. (Procedure "F")
 - Not initialized: 4 sec.
 - Initialized: 3 sec.

5. DIAGNOSTIC SYSTEM

- Inspect the battery voltage.

Battery voltage:

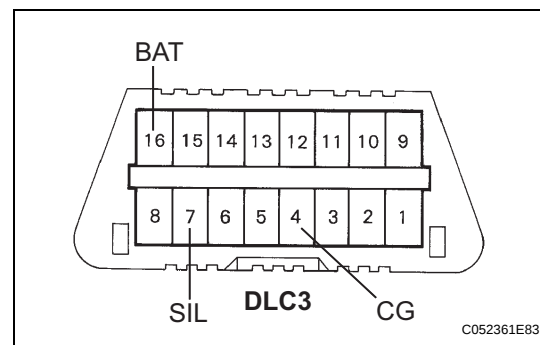
11 to 14 V

If voltage is below 11 V, recharge the battery before proceeding.

- Check DLC3.

The vehicle's skid control ECU uses ISO 9141-2 for communication. The terminal arrangement of DLC3 complies with SAE J1962 and matches with the ISO 9141-2 format.

Verify conditions listed in the table below:

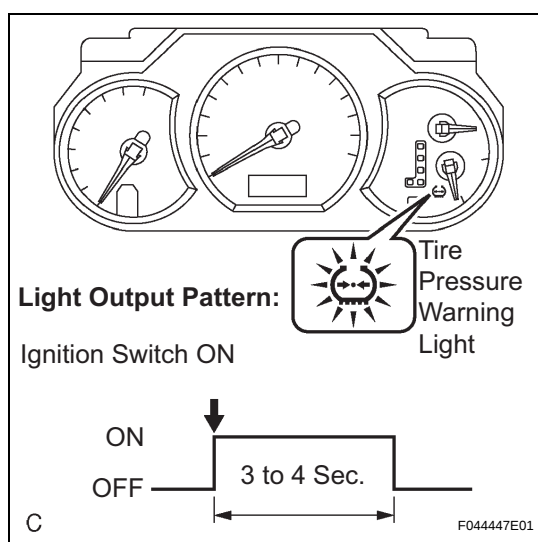


Terminal No.	Terminal name	Connection / Voltage or Resistance	Condition
7	SIL	Bus + Line / Pulse generation	During transmission
4	CG	Chassis Ground to Body Ground / 1 Ω or less	Always
16	BAT	Battery Positive to Body Ground / 10 to 14 V	Always

HINT:

If the intelligent tester displays "UNABLE TO CONNECT TO VEHICLE" when the cable of the intelligent tester is properly connected to DLC3, the ignition switch is turned to the ON position and the tester is operated, there is a problem on the vehicle side or tester side.

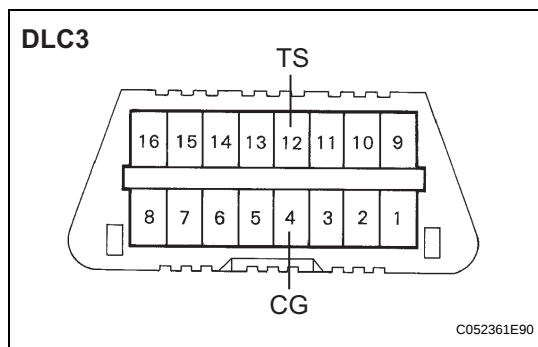
- If communication is normal when the tester is connected to another vehicle, inspect DLC3 on the original vehicle.
- If communication is still not possible when the tool is connected to another vehicle, the problem is probably in the tester itself. In this case, consult the Service Department listed in the tester's instruction manual.

**6. CHECK WARNING LIGHT**

- Turn the ignition switch to the OFF position.
- When the ignition switch is turned to the ON position, the light should come on for 3 to 4 seconds and then go off.

HINT:

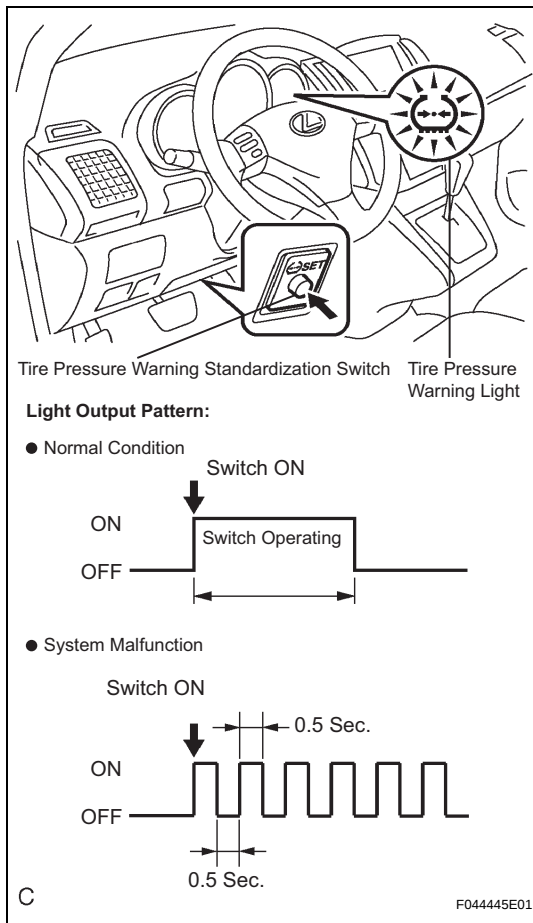
If the tire pressure warning light has a defect, check the tire pressure warning light output patterns and the problem symptoms table .

**7. TEST MODE (USING SST CHECK WIRE)**

- Make sure the ignition switch is OFF.
- Using the SST(s), connect the terminals TS and CG of DLC3.

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- Turn the ignition switch to the ON position (The tire pressure warning standardization switches to TEST mode).



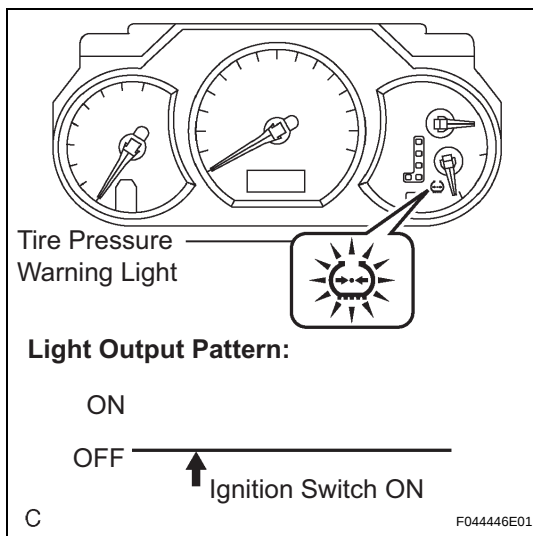
- (d) Press the tire pressure warning standardization switch. (Procedure "D")
 - (e) Check that the tire pressure warning light comes on.
- HINT:

- Unless the above Procedure "D" is performed, the tire pressure warning light remains off while in TEST mode.
- When the tire pressure warning system has any problem, the tire pressure warning light blinks at 0.5 seconds interval.

If the light output result is not normal, proceed to the problem symptoms table or TS terminal circuit.

Item	See procedure
Problem symptoms table	TW-6
TS terminal circuit	-

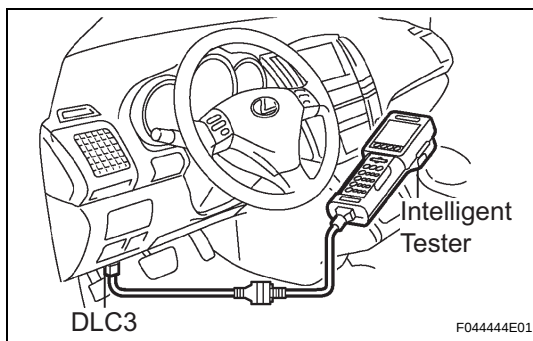
- (f) Turn the ignition switch off.
 - (g) Remove the SST(s) from the DLC3.
- SST 09843-18040**

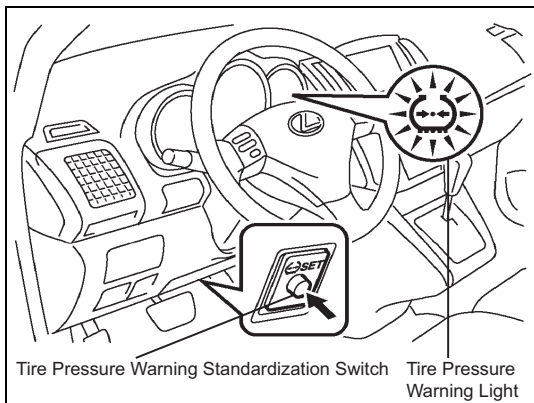


- (h) Turn the ignition switch to the ON position.
- (i) Check that the tire pressure warning light goes off.
- (j) Initialize the tire pressure warning system (See step 1.).

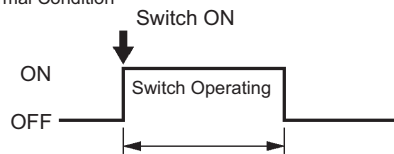
8. TEST MODE (USING INTELLIGENT TESTER)

- (a) Connect the intelligent tester to DLC3.
- (b) Turn the ignition switch to the ON position.
- (c) Select the "TEST MODE", and proceed checking with the intelligent tester.

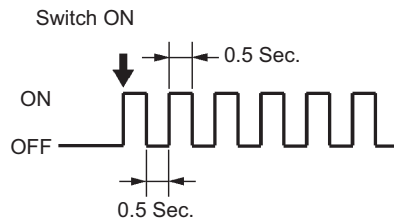


**Light Output Pattern:**

● Normal Condition



● System Malfunction



C

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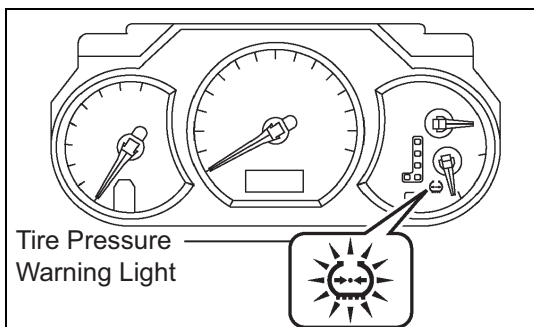
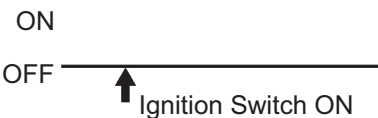
- (d) Press the tire pressure warning standardization switch. (Procedure "D")
- (e) Check that the tire pressure warning light comes on.
- HINT:

- Unless the above Procedure "D" is performed, the tire pressure warning light remains off while in TEST mode.
- When the tire pressure warning system has any problem, the tire pressure warning light blinks at 0.5 seconds interval.

If the light output result is not normal, proceed to the problem symptoms table or TS terminal circuit.

Item	See procedure
Problem symptoms table	TW-6
TS terminal circuit	-

- (f) Turn the ignition switch off.

**Light Output Pattern:**

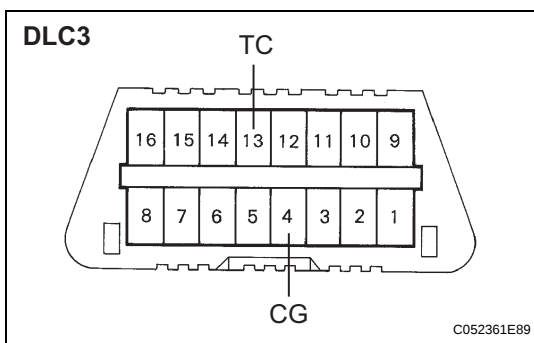
C

F044446E01

- (g) Turn the ignition switch to the ON position.
- (h) Check that the tire pressure warning light goes off.
- (i) Initialize the tire pressure warning system (See step 1.).

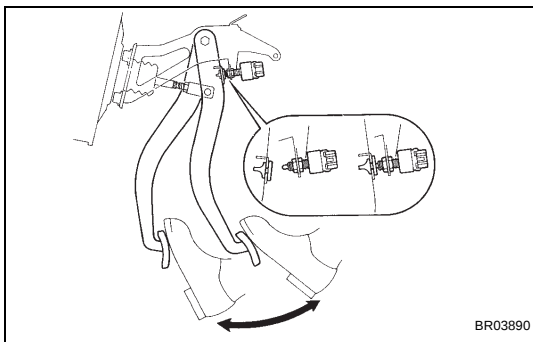
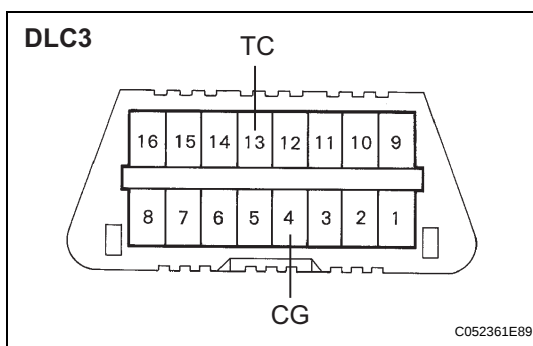
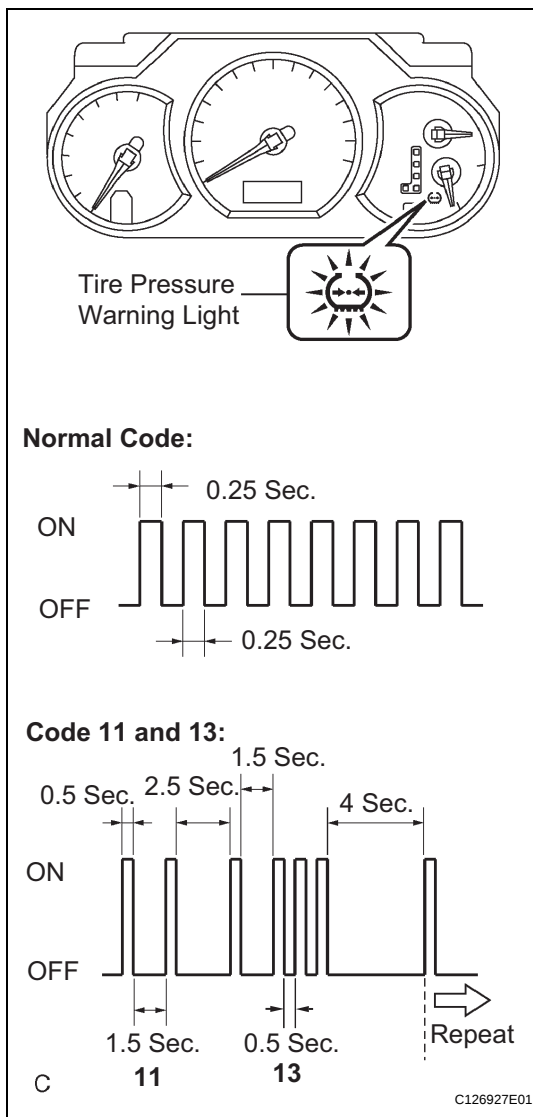
9. DTC CHECK (USING SST CHECK WIRE)**HINT:**

Check for DTCs in the ABS system first.



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- (a) Checking DTCs.
- (1) Using SST(s), connect terminals TC and CG of DLC3.
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- (2) Turn the ignition switch to the ON position.



- (3) Read and record any DTCs from the tire pressure warning light on the combination meter. Refer to the illustration to the left as examples for a normal system code and codes 11 and 13.
- HINT:**

- If the tire pressure warning light does not blink, inspect the tire pressure warning light circuit or TC terminal circuit.

Trouble Area	See procedure
Tire pressure warning light circuit	TW-24
TC terminal circuit	-

- If 2 or more malfunctions occur at the same time, the lowest numbered DTC is displayed first.
- (4) Refer to the Diagnostic Trouble Code Chart (See page [TW-17](#)) for DTCs information.
- (5) After completing the check, turn the ignition switch off then remove SST(s) from DLC3.

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- (b) Clearing the DTCs.

- Turn the ignition switch off.
- Using SST(s), connect terminals TC and CG of DLC3.

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- Turn the ignition switch to the ON position.

- Clear the DTCs stored in the ECU by depressing the brake pedal 8 times or more within 5 seconds.
- Check that the tire pressure warning light indicates the normal code.
- Turn the ignition switch off, remove SST(s) from DLC3.

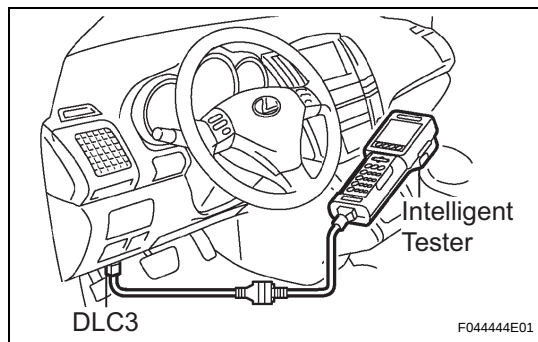
SST 09843-18040

HINT:

Disconnecting the battery cable will not erase the DTCs in the ECU.

10. DTC CHECK (USING INTELLIGENT TESTER)**HINT:**

Check for DTCs in the ABS system first.

**(a) Checking the DTCs using the intelligent tester.**

- (1) Connect the intelligent tester to DLC3.
- (2) Turn the ignition switch to the ON position.
- (3) Read and record the DTCs by following the prompts on the tester screen.

HINT:

Refer to the intelligent tester operator's manual for further details.

(b) Clearing the DTCs using the intelligent tester.

- (1) Connect the intelligent tester to DLC3.
- (2) Turn the ignition switch to the ON position.
- (3) Clear the DTCs following the prompts on the tester screen.

HINT:

Refer to the intelligent tester operator's manual for further details.

11. DATA LIST**HINT:**

By accessing the ABS DATA LIST displayed by the intelligent tester, you can read the value of the switches and sensors without removing any parts. Reading the DATA LIST is the first step of troubleshooting is one method to shorten labor time.

- (a) Connect the intelligent tester to DLC3.
- (b) Turn the ignition switch to the ON position.
- (c) Following the display on the tester, select the ABS "DATA LIST".

ABS:

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
STOP LIGHT SW	Stop light switch / ON or OFF	ON: Brake pedal depressed OFF: Brake pedal released	-
WHEEL SPD FR	Front right wheel speed reading / min.: 0 km/h (0 mph) max.: 326 km/h (202 mph)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD FL	Front left wheel speed reading / min.: 0 km/h (0 mph) max.: 326 km/h (202 mph)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RR	Rear right wheel speed reading / min.: 0 km/h (0 mph) max.: 326 km/h (202 mph)	Actual wheel speed	Speed indicated on speedometer
WHEEL SPD RL	Rear left wheel speed reading / min.: 0 km/h (0 mph) max.: 326 km/h (202 mph)	Actual wheel speed	Speed indicated on speedometer
VEHICLE SPD	Vehicle speed reading / min.: 0 km/h (0 mph) max.: 255 km/h (158 mph)	Actual vehicle speed	Speed indicated on speedometer
EFI COM	EFI communication open detection / Normal or Open	Normal	-

Item	Measurement Item / Range (Display)	Normal Condition	Diagnostic Note
TEST MODE	Test mode / NORMAL or TEST	NORMAL: Normal mode TEST: During test mode	-
#CODES	Number of DTC recorded / min.: 0, max.: 255	Min.: 0, Max.: -	-

12. ACTIVE TEST LIST

HINT:

Perform the ACTIVE TEST using the intelligent tester to operate the ABS and tire pressure warning lights.

Performing the ACTIVE TEST is one of the methods to shorten labor time. It is possible to display the DATA LIST during the ACTIVE TEST.

- Connect the intelligent tester to DLC3.
- Turn the ignition switch to the ON position.
- Following the display on tester, perform the "ACTIVE TEST".

ABS:

Item	Vehicle Condition / Test Details	Diagnostic Note
ABS WARN LIGHT	ABS warning light / ON or OFF	-

METER:

Item	Vehicle Condition / Test Details	Diagnostic Note
TIRE PRESS WARN LIGHT	Tire pressure warning light / ON or OFF	-

DIAGNOSTIC TROUBLE CODE CHART

HINT:

- If no abnormality is found when the parts are checked, inspect the skid control ECU.
- When the malfunction is found with the skid control ECU, replace the brake actuator assembly with ECU.
- If a malfunction code is displayed during the DTC check, check the circuit for that DTC listed in the table below. For details of each code, refer to the "See page" in the DTC chart.
- DTC 13 will not be output, when the check is performed with the intelligent tester.

TIRE PRESSURE WARNING SYSTEM

DTC No.	Detection Item	Trouble Area	See page
13	Open Circuit in ABS Motor Relay Circuit	ABS system	TW-18
C2106/11	Stop Lamp Switch Constant on Malfunction	1. Stop light switch assembly 2. Stop light switch assembly circuit	TW-19

DTC**13****Open Circuit in ABS Motor Relay Circuit****DESCRIPTION**

The skid control ECU outputs this DTC when a speed sensor malfunction occurs or there is an open in the stop light switch assembly circuit of the ABS system.

DTC No.	DTC Detection Condition	Trouble Area
13	When satisfying any of the following conditions: - Speed sensor malfunction of ABS system occurs. - Speed sensor noise malfunction of ABS system occurs. - Stop light switch assembly switch open circuit of ABS system occurs.	- ABS system - Brake actuator assembly

1**CHECK DTC OUTPUT**

- (a) Check if the normal code is output by ABS system (See page [BC-21](#)).

OK:

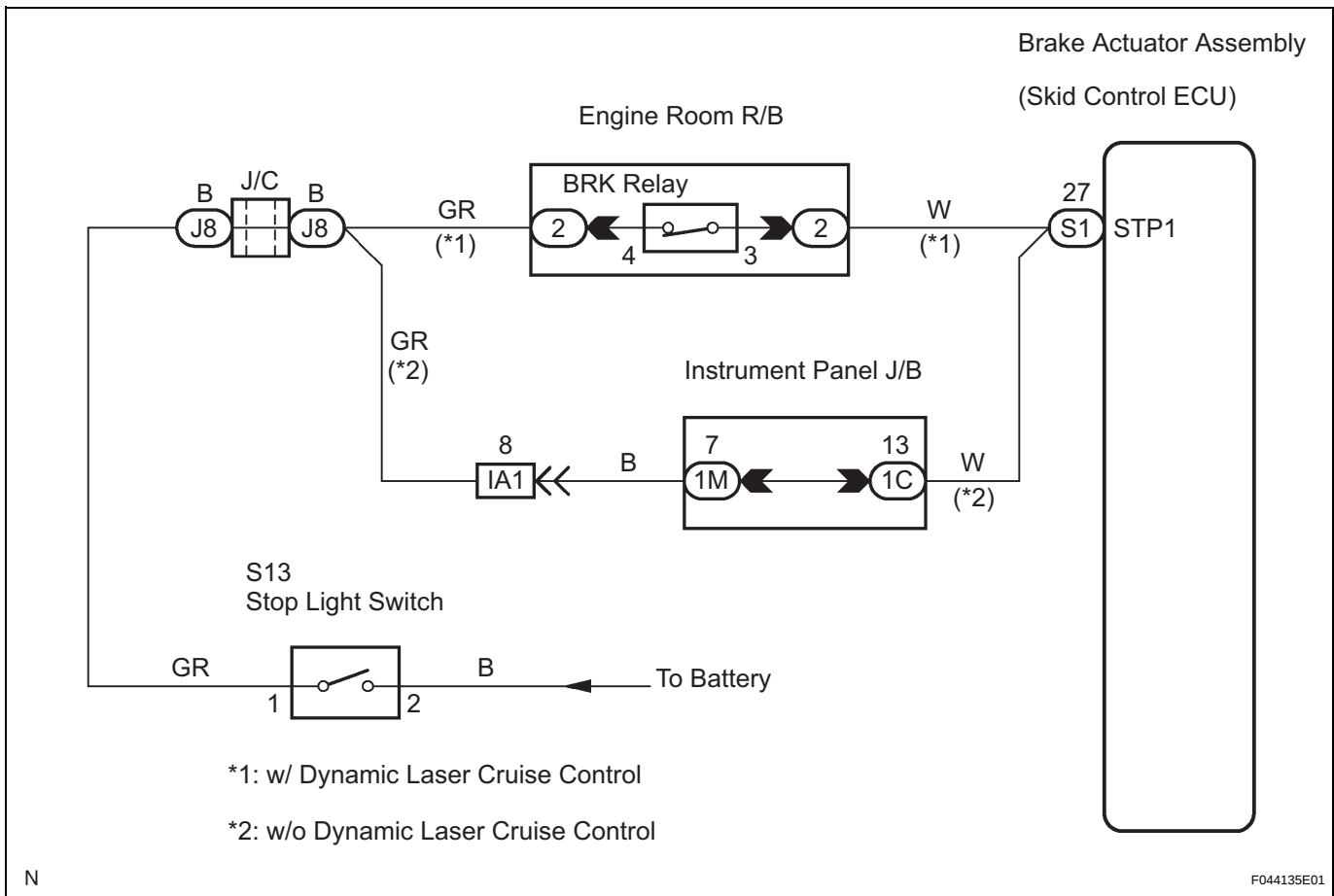
Normal code output.

NG**REPAIR CIRCUITS INDICATED BY OUTPUT DTCS****OK****REPLACE BRAKE ACTUATOR ASSEMBLY**

DTC**C2106/11****Stop Lamp Switch Constant on Malfunction****DESCRIPTION**

When the stop light switch is ON (brake pedal depressed), the skid control ECU suspends the tire pressure warning system.

DTC No.	DTC Detection Condition	Trouble Area
C2106/11	With vehicle speed at 20 km/h (12 mph) or more, the stop light switch assembly is "ON" for 15 mins.	- Stop light switch assembly - Stop light switch assembly circuit - Brake actuator assembly

WIRING DIAGRAM**1****CHECK STOP LIGHT SWITCH ASSEMBLY OPERATION**

- (a) Check that the stop light comes on when the brake pedal is depressed, and goes off when the brake pedal is released.

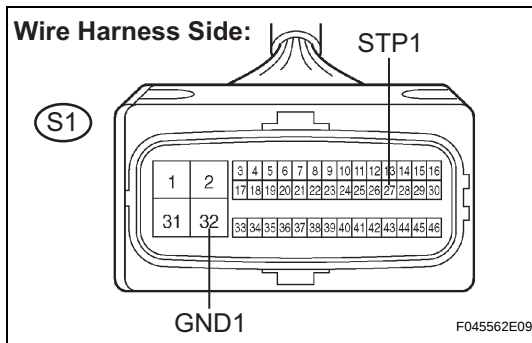
OK:**Stop light functions normally.****NG****Go to step 4****OK**

2 CHECK REAR COMBINATION LIGHT ASSEMBLY LH

NG

REPLACE REAR COMBINATION LIGHT ASSEMBLY LH

OK

3 CHECK HARNESS AND CONNECTOR (BRAKE ACTUATOR ASSEMBLY - STOP LIGHT SWITCH ASSEMBLY)

- (a) Disconnect the brake actuator assembly S1 connector.
 (b) Measure the voltage according to the values in the table below.

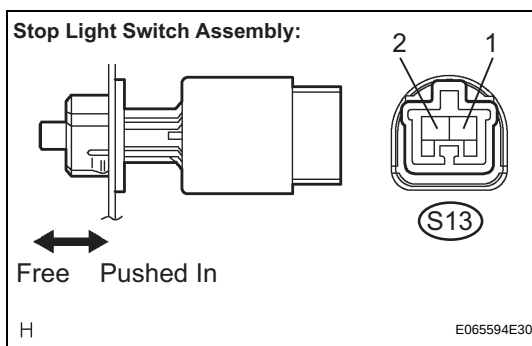
Voltage

Switch condition	Tester connection	Specified condition
Brake pedal depressed	S1-27 (STP1) - S1-32 (GND1)	10 to 14 V
Brake pedal released	S1-27 (STP1) - S1-32 (GND1)	Below 1.5 V

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

REPLACE BRAKE ACTUATOR ASSEMBLY**4 INSPECT STOP LIGHT SWITCH ASSEMBLY**

- (a) Disconnect the stop light switch assembly S13 connector.
 (b) Measure the resistance according to the values in the table below.

Resistance

Switch condition	Tester connection	Specified condition
Switch pin free	1 - 2	Below 1 Ω
Switch pin pushed in	1 - 2	10 k Ω or higher

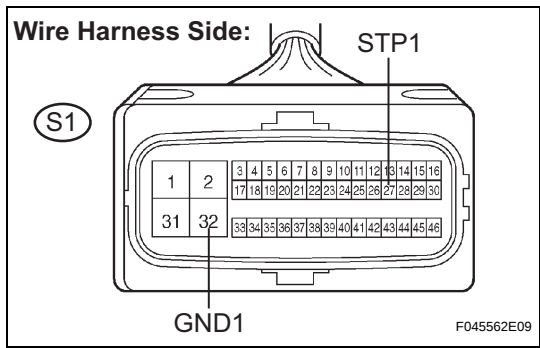
NG

REPLACE STOP LIGHT SWITCH ASSEMBLY

OK

5

CHECK HARNESS AND CONNECTOR (BRAKE ACTUATOR ASSEMBLY - STOP LIGHT SWITCH ASSEMBLY)



- (a) Connect the stop light switch assembly S13 connector.
- (b) Disconnect the brake actuator assembly S1 connector.
- (c) Measure the voltage according to the values in the table below.

Voltage

Switch condition	Tester connection	Specified condition
Brake pedal depressed	S1-27 (STP1) - S1-32 (GND1)	10 to 14 V
Brake pedal released	S1-27 (STP1) - S1-32 (GND1)	Below 1.5 V

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

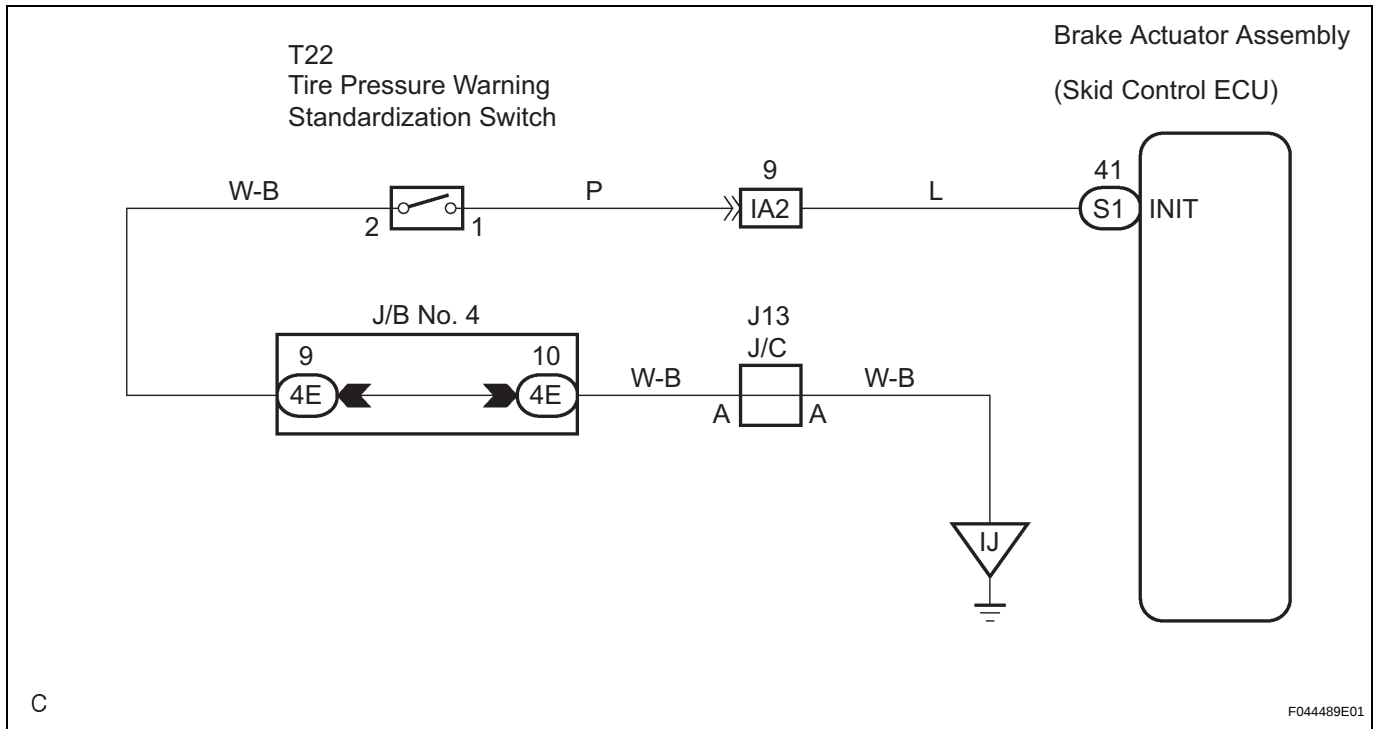
REPLACE BRAKE ACTUATOR ASSEMBLY

Tire Pressure Warning Reset Switch Circuit

DESCRIPTION

Receiving the signal from the tire pressure warning switch, the skid control ECU indicates initialization of the tire pressure warning system.

WIRING DIAGRAM

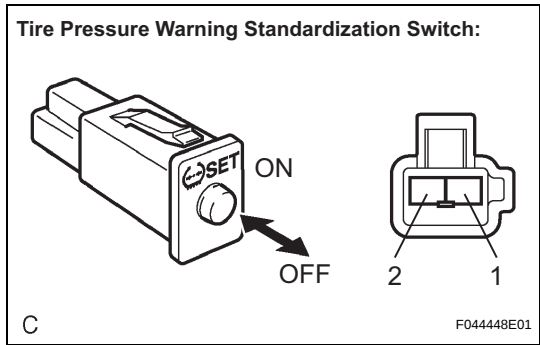

1
CHECK IN THE TEST MODE
OK:

Tire pressure warning switch functions normally.

NG
Go to step 2
OK
CORRECT TIRE PRESSURE IT TO THE SPECIFIED PRESSURE, THEN INITIALIZE THE SYSTEM

2

INSPECT TIRE PRESSURE WARNING RESET SWITCH



- (a) Disconnect the tire pressure warning standardization switch connector.
- (b) Measure the resistance between the terminal 1 and 2 of the tire pressure warning standardization switch when the tire pressure warning standardization switch is ON and OFF.

Resistance

Switch condition	Specified condition
ON	Below 1 Ω
OFF	10 kΩ or higher

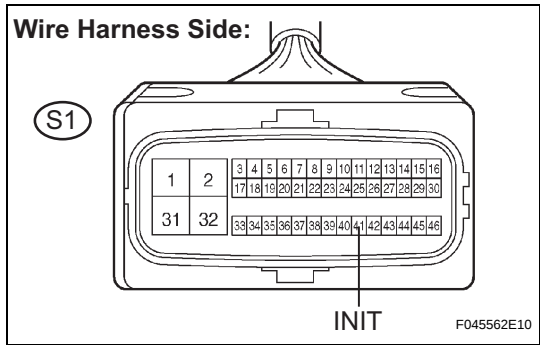
NG

REPLACE TIRE PRESSURE WARNING RESET SWITCH

OK

3

CHECK HARNESS AND CONNECTOR (TIRE PRESSURE WARNING RESET SWITCH - BRAKE ACTUATOR ASSEMBLY)



- (a) Reconnect the tire pressure warning switch connector.
- (b) Disconnect the brake actuator assembly S1 connector.
- (c) Measure the resistance according to the values in the table below.

Resistance

Switch condition	Specified condition
ON	Below 1 Ω
OFF	10 kΩ or higher

NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

Tire Pressure Warning Light Circuit

DESCRIPTION

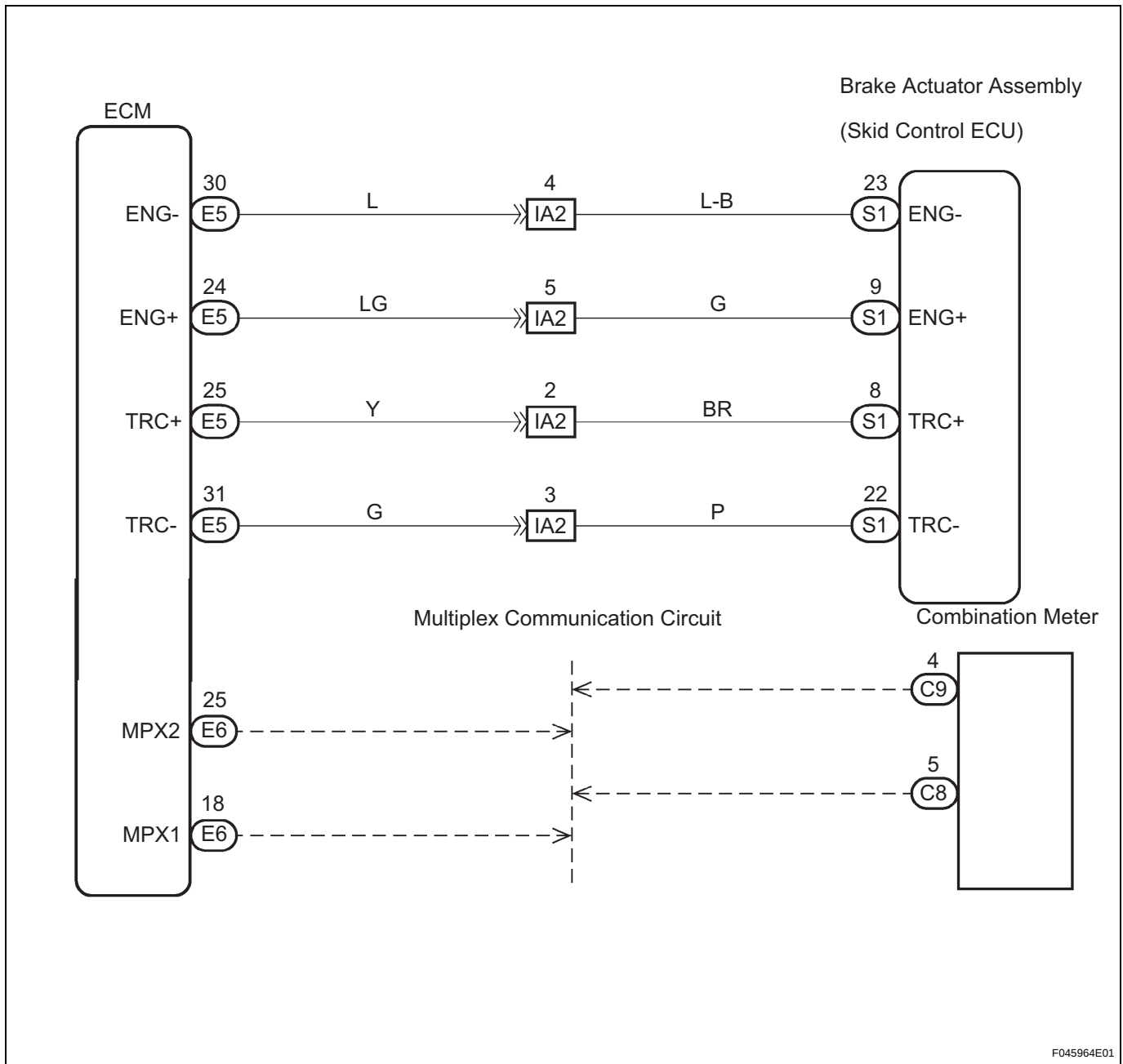
When the tire pressure decreases, the skid control ECU sends the communication signal to the combination meter assembly through the ECM, and it illuminates the tire pressure warning light on the combination meter assembly.

The tire pressure warning light also comes on when the signal for the tire pressure warning light cuts off.

HINT:

Refer to the "TIRE PRESSURE WARNING LIGHT CHART" section in the "PRE-CHECK" for the tire pressure warning light (See page [TW-8](#)).

WIRING DIAGRAM



HINT:

Start the inspection from step 1 when using the intelligent tester and start from step 2 when not using the intelligent tester.

1 INSPECT COMBINATION METER ASSEMBLY (TIRE PRESSURE WARNING LIGHT)

- (a) Connect the intelligent tester to DLC3.
- (b) Turn the ignition switch to the ON position, and push the intelligent tester main switch to turn ON.
- (c) Select the item below in the ACTIVE TEST, and operate it with the intelligent tester.

METER:

Item	Vehicle Condition / Test Details
TIRE PRESS WARN LIGHT	Tire pressure warning light / ON or OFF

- (d) Check the tire pressure warning light.

OK:

Tire pressure warning light comes on.

NG**REPLACE COMBINATION METER ASSEMBLY****OK****2 CHECK DTC OUTPUT**

- (a) Check if the normal code is output by SFI system (See page [ES-37](#)).

OK:

No DTC output from SFI system.

NG**REPAIR CIRCUITS INDICATED BY OUTPUT DTCS****OK****3 CHECK DTC OUTPUT**

- (a) Check if the normal code is output by VSC system (See page [ES-37](#)).

OK:

No DTC output from VSC system.

NG**REPAIR CIRCUITS INDICATED BY OUTPUT DTCS****OK****REPLACE BRAKE ACTUATOR ASSEMBLY**

Ambient Temperature Sensor Circuit

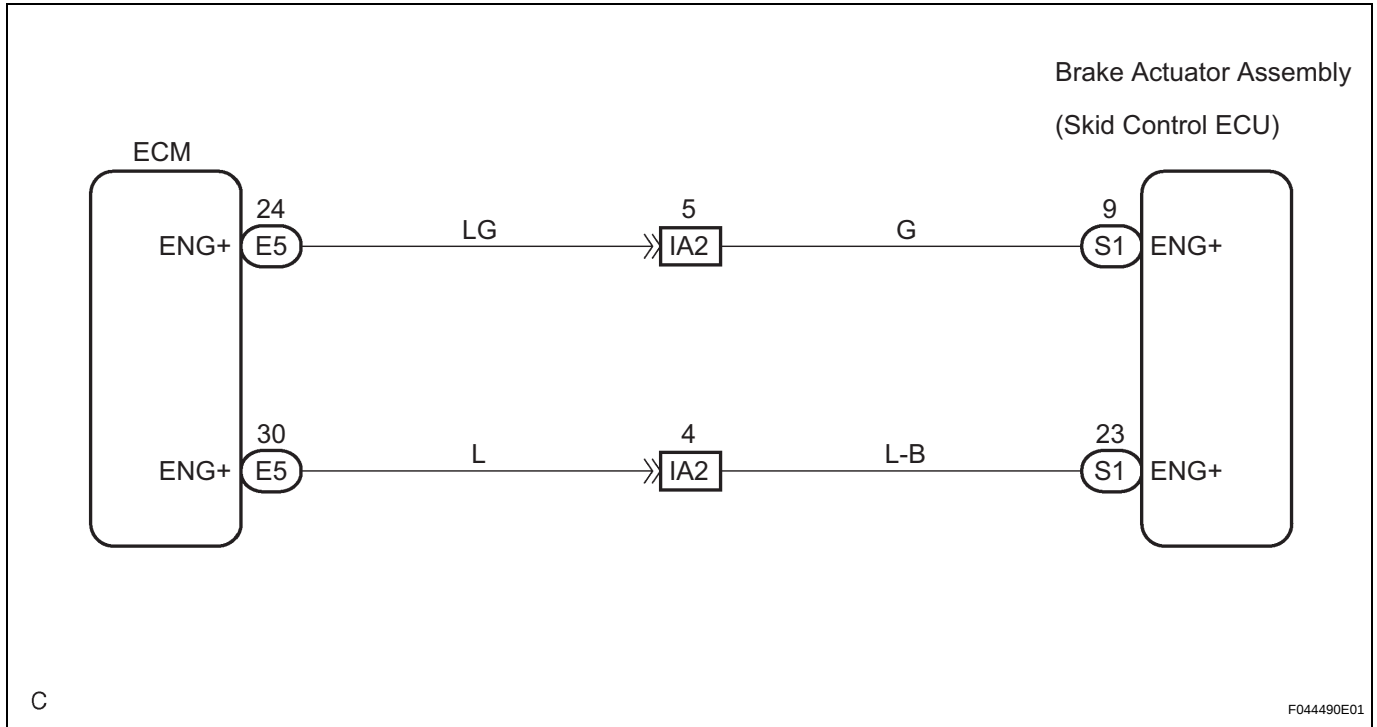
DESCRIPTION

The ambient temperature sensor sends the outside temperature signal to the ECM. The ECM transmits the signal to the skid control ECU as a communication signal. The skid control ECU controls the tire pressure warning system, depending on the changes of the outside temperature.

HINT:

The signal sent from the ambient temperature sensor is also used in the A/C.

WIRING DIAGRAM



1

CHECK DTC OUTPUT

- (a) Check if the normal code is output by SFI system (See page [ES-37](#)).

OK:

Normal code is output.

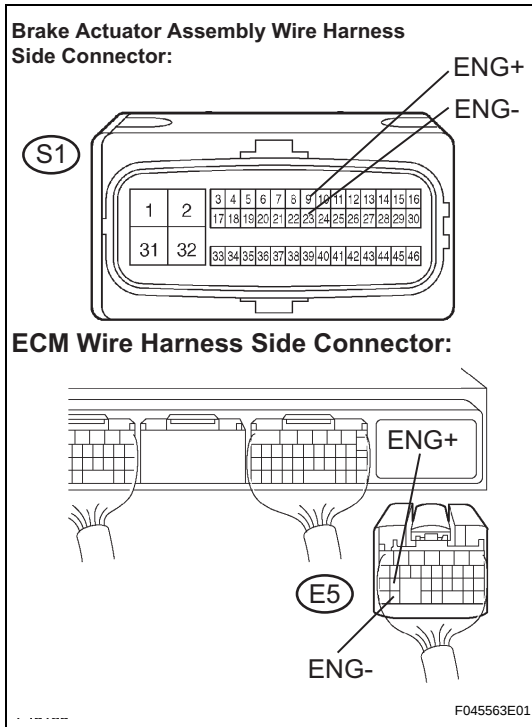
NG

REPAIR CIRCUITS INDICATED BY OUTPUT DTCS

OK

2

CHECK HARNESS AND CONNECTOR (BRAKE ACTUATOR ASSEMBLY - ECM)



- Disconnect the brake actuator assembly S1 connector and ECM E5 connector.
- Measure the resistance between each terminal of brake actuator assembly and ECM wire harness side connectors.

Resistance

Tester connection	Specified condition
S1-9 (ENG+) - E5-24 (ENG+)	Below 1 Ω
S1-23 (ENG-) - E5-30 (ENG-)	Below 1 Ω

- Measure the resistance between each terminal brake actuator assembly wire harness side connector and body ground.

Resistance

Tester connection	Specified condition
S1-9 (ENG+) - Body ground	10 k Ω or higher
S1-23 (ENG-) - Body ground	10 k Ω or higher

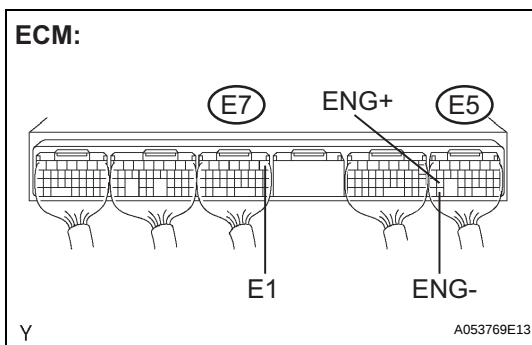
NG

REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

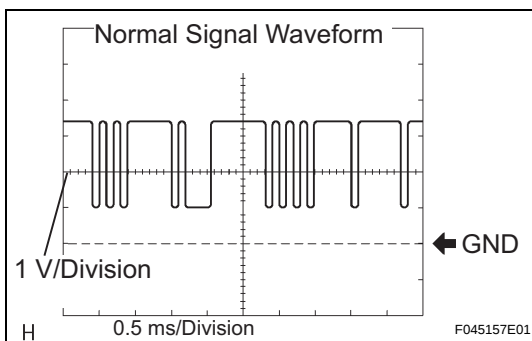
3

INSPECT ECM (ENG+, ENG- OUTPUT)



- Connect the brake actuator assembly S1 connector and ECM E5 connector.
- Remove the ECM with the connectors connected.
- Turn the ignition switch to the ON position.
- Using an oscilloscope, connect the terminals, as shown in the chart below.

Tester Connection
E5-24 (ENG+) - E7-1 (E1)



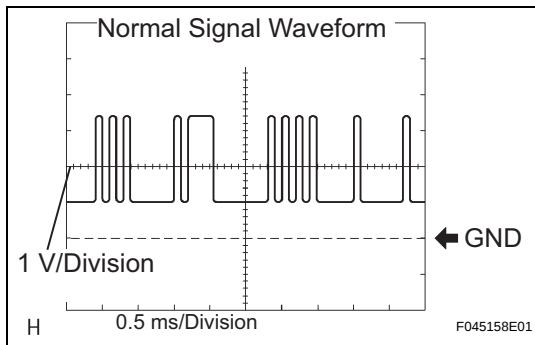
- With the engine idling, check the output waveform.

OK:
Signal waveform appears as shown in the illustration.
HINT:

As the vehicle speed increases, the waveform cycle narrows.

- Using an oscilloscope, connect the terminals, as shown in the chart below.

Tester Connection
E5-30 (ENG-) - E7-1 (E1)



(g) With the engine idling, check the output waveform.

OK:

Signal waveform appears as shown in the illustration.

HINT:

As the engine speed increases, the waveform cycle narrows.

NG

REPLACE ECM

OK

REPLACE BRAKE ACTUATOR ASSEMBLY