

DTC	P0504	BRAKE SWITCH "A"/"B" CORRELATION
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CIRCUIT DESCRIPTION

In addition to turning on the stop lamp, the stop lamp switch signals are used for a variety of engine, transmission, and suspension functions as well as being an input for diagnostic checks. It is important that the switch operates properly, therefore this switch is designed with two complementary signal outputs: STP and ST1. The ECM analyzes these signal outputs to detect malfunctions in the stop lamp switch.

HINT:

Normal condition is as shown in the table.

Signal	Brake pedal released	In transition	Brake pedal depressed
STP	OFF	ON	ON
ST1	ON	ON	OFF

DTC No.	DTC Detection Condition	Trouble Area
P0504	Conditions (a), (b) and (c) continue for 0.5 seconds or more: (a) Ignition switch ON (b) Brake pedal released (c) STP signal is OFF when the ST1 signal is OFF	<ul style="list-style-type: none"> • Short in stop lamp switch signal circuit • STOP fuse • Stop lamp switch • ECM

The diagram illustrates the electrical circuit for the Stop Lamp Switch Assembly (S15) and its connections to other vehicle components. The circuit includes the following components and connections:

- Stop Lamp Switch Assembly (S15):** Features two switches. The top switch controls the Stop Lamp (STP) through the Passenger Side J/B (terminals 3/4L and 12/4M) and the ECM (terminal 19/E6). The bottom switch controls the Stop Lamp (ST1-) through the Passenger Side J/B (terminals 3/4L and 12/4M) and the ECM (terminal 12/E6).
- Instrument Panel J/B Assy:** Contains terminals 1E and 1A, which are connected to the Stop Lamp (STOP) and the Stop Lamp (ST1-) respectively.
- Passenger Side J/B:** Two assemblies are shown. The top one connects the Stop Lamp Switch Assembly to the ECM. The bottom one connects the Stop Lamp Switch Assembly to the Instrument Panel J/B Assy (terminals 1/4E and 4/4M) and the ECM (terminal 19/E6).
- ECM (Engine Control Module):** Contains the Stop Lamp (STP) and Stop Lamp (ST1-) relays.
- Other Components:**
 - J6 J/C:** A junction box connecting the Stop Lamp Switch Assembly to the Instrument Panel J/B Assy.
 - J7 J/C:** A junction box connecting the Stop Lamp Switch Assembly to the ECM.
 - Relays:** 1E, 1A, 4L, 4M, 4E, 4M, 1C, and 1G.
 - Fuses:** FL Main and FL Block Assy.
 - Battery:** The power source for the circuit.
 - Grounds:** Indicated by the ground symbol (three horizontal lines of decreasing width).

INSPECTION PROCEDURE

HINT:

Read freeze frame data using the hand-held tester or the OBD II scan tool. Freeze frame data records the engine conditions when a malfunction is detected. When troubleshooting, freeze frame data can help determine if the vehicle was running or stopped, if the engine was warmed up or not, if the air-fuel ratio was lean or rich, and other data from the time the malfunction occurred.

Hand-held tester:

1 CHECK STOP LAMP (OPERATION)

- (a) Check if the stop lamps turn on and off normally when the brake pedal is depressed and released.

OK:

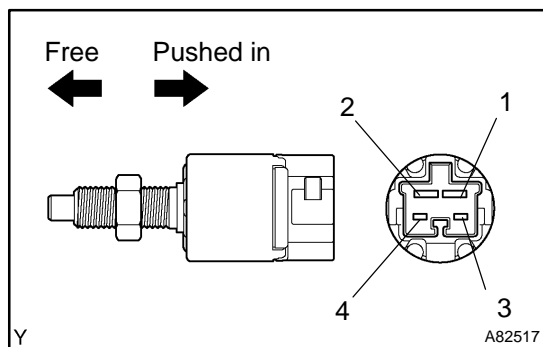
The stop lamps turn on when you depress the brake pedal.

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REPAIR OR REPLACE STOP LAMP SWITCH CIRCUIT

OK

2 INSPECT STOP LAMP SWITCH ASSY (RESISTANCE)



- (a) Measure the resistance of the switch terminals.

Standard:

Switch Condition	Tester Connection	Specified Condition
Switch pin free	1 - 2	Below 1.5 V
Switch pin free	3 - 4	10 kΩ or higher
Switch pin pushed in	1 - 2	10 kΩ or higher
Switch pin pushed in	3 - 4	Below 1.5 V

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REPLACE STOP LAMP SWITCH ASSY

OK

3 READ VALUE OF HAND-HELD TESTER (STP SIGNAL, ST1 VOLTAGE)

- Turn the ignition switch ON.
- On the hand-held tester, enter the following menus:
DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL /
STOP LIGHT SW. Read the value.

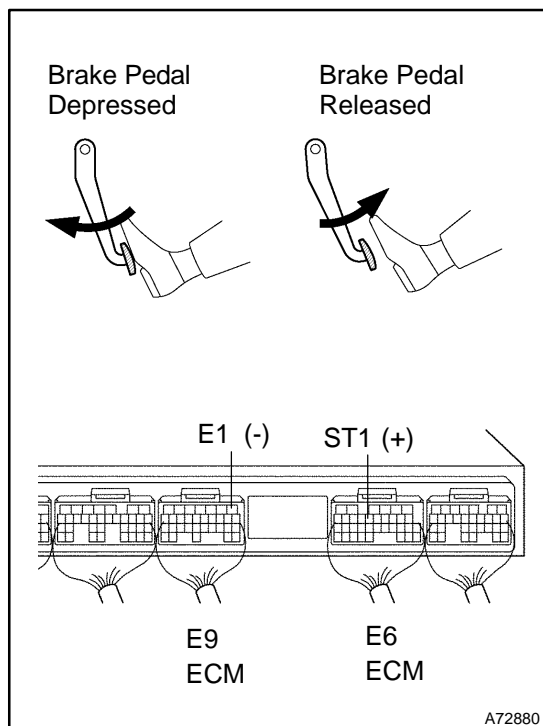
Standard:

Brake Pedal Condition	Specified Condition
Depressed	STP Signal ON
Released	STP Signal OFF

- Measure the voltage of the ECM connectors.

Standard:

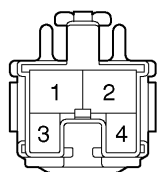
Tester Connection	Brake Pedal Condition	Specified Condition
E6-12 (ST1) - E9-1 (E1)	Depressed	Below 1.5 V
E6-12 (ST1) - E9-1 (E1)	Released	7.5 to 14 V



OK

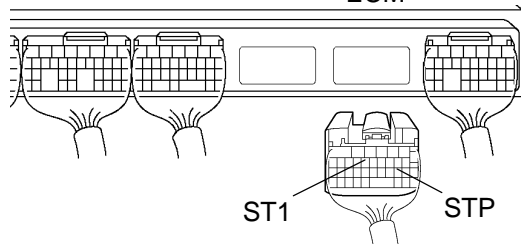
CHECK FOR INTERMITTENT PROBLEMS
(See page 05-9)

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4 CHECK WIRE HARNESS (STOP LAMP SWITCH - ECM)**Wire Harness Side**

S15
Stop Lamp Switch

E6
ECM



Y
A56986
A67404

A87771

- Disconnect the S15 stop lamp switch connector.
- Disconnect the E6 ECM connector.
- Measure the resistance of the wire harness side connectors.

Standard:

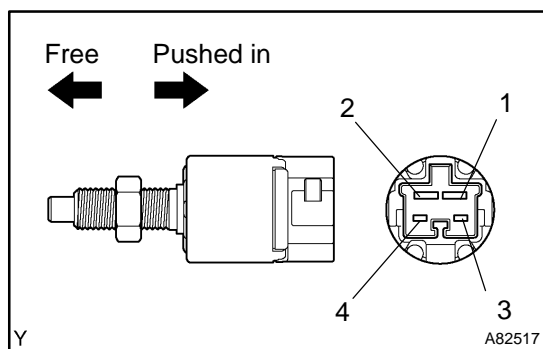
Tester Connection	Specified Condition
S15-1 - E6-19 (STP) S15-4 - E6-12 (ST1)	Below 1 Ω
S15-1 or E6-19 (STP) - Body ground S15-4 or E6-12 (ST1) - Body ground	10 k Ω or higher

NG**REPAIR OR REPLACE HARNESS AND CONNECTOR****OK****REPLACE ECM (See page 10-9)****OBD II scan tool (excluding hand-held tester):****1 CHECK STOP LAMP (OPERATION)**

- Check if the stop lamps turn on and off normally when the brake pedal is depressed and released.

OK:**The stop lamps turn on when you depress the brake pedal.****NG****REPAIR OR REPLACE STOP LAMP SWITCH CIRCUIT****OK**

2 INSPECT STOP LAMP SWITCH ASSY



- (a) Measure the resistance of the switch terminals.

Standard:

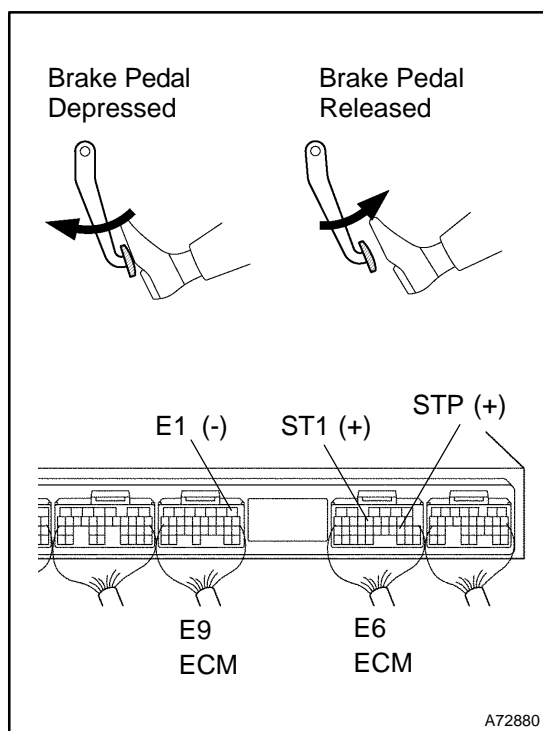
Switch Condition	Tester Connection	Specified Condition
Switch pin free	1 - 2	Below 1 Ω
Switch pin free	3 - 4	10 k Ω or higher
Switch pin pushed in	1 - 2	10 k Ω or higher
Switch pin pushed in	3 - 4	Below 1 Ω

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REPLACE STOP LAMP SWITCH ASSY

OK

3 INSPECT ECM (STP, ST1 VOLTAGE)



- (a) Turn the ignition switch ON.
(b) Measure the voltage of the ECM connectors.

Standard:

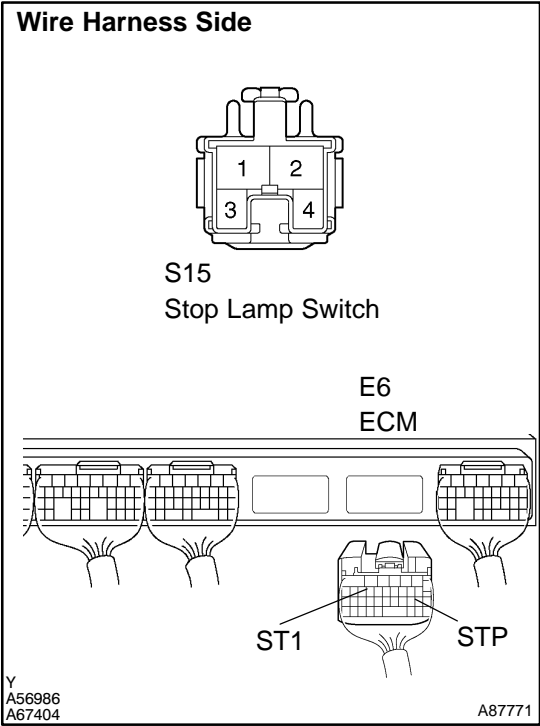
Tester Connection	Brake Pedal Condition	Specified Condition
E6-19 (STP) - E9-1 (E1)	Depressed	7.5 to 14 V
E6-19 (STP) - E9-1 (E1)	Released	Below 1.5 V
E6-12 (ST1) - E9-1 (E1)	Depressed	Below 1.5 V
E6-12 (ST1) - E9-1 (E1)	Released	7.5 to 14 V

OK

CHECK FOR INTERMITTENT PROBLEMS
(See page 05-9)

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4 CHECK WIRE HARNESS (STOP LAMP SWITCH - ECM)



- (a) Disconnect the S15 stop lamp switch connector.
- (b) Disconnect the E6 ECM connector.
- (c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified Condition
S15-1 - E6-19 (STP) S15-4 - E6-12 (ST1)	Below 1 Ω
S15-1 or E6-19 (STP) - Body ground S15-4 or E6-12 (ST1) - Body ground	10 k Ω or higher

NG REPAIR OR REPLACE HARNESS AND CONNECTOR

OK

REPLACE ECM (See page 10-9)