DTC	P0504	Brake Switch "A" / "B" Correlation

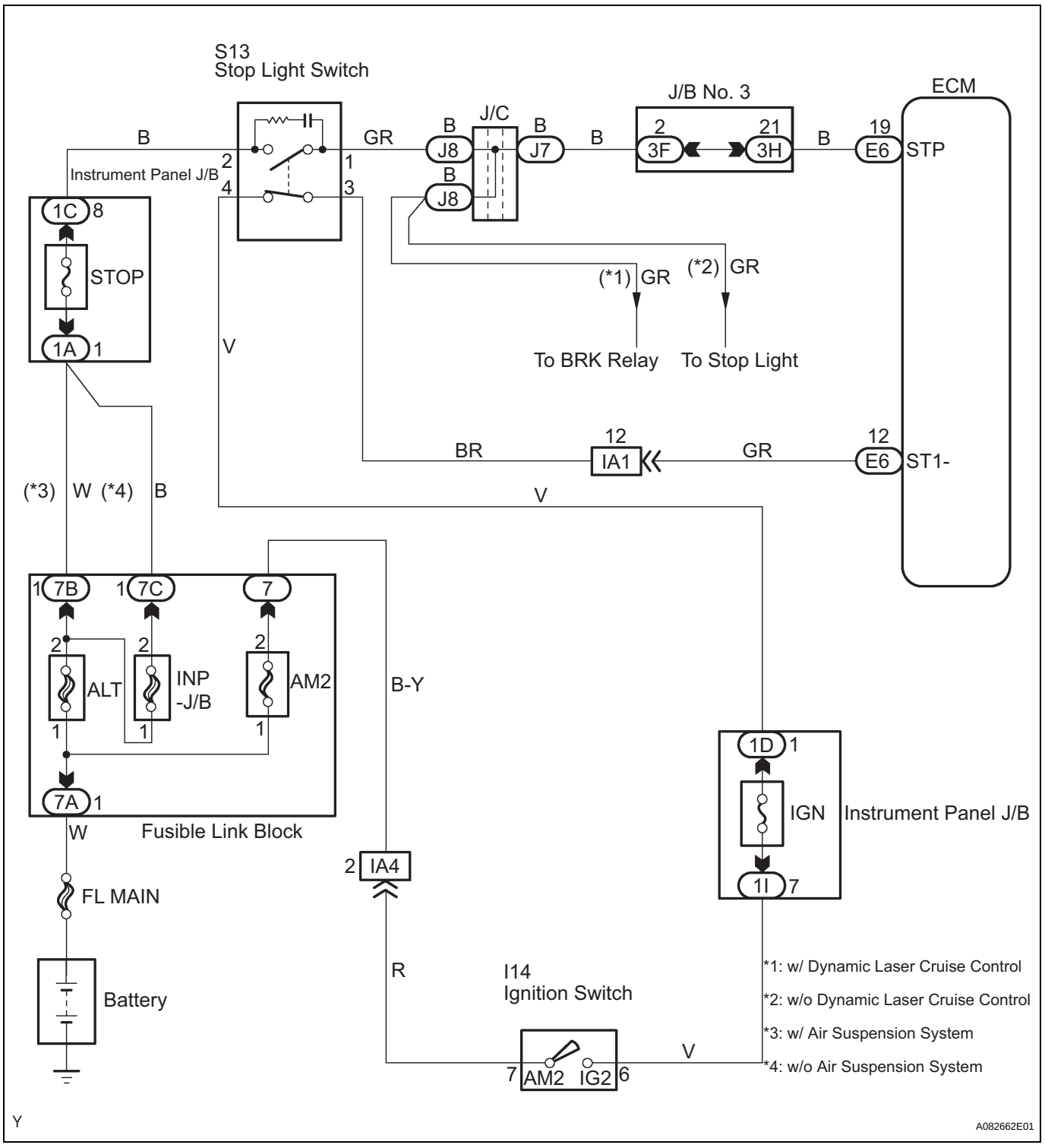
DESCRIPTION

In addition to turning on the stop lights, the stop light 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 2 complementary signal outputs: STP and ST1-. The ECM analyzes these signal outputs to detect malfunctions in the stop light 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	• Short in stop light switch signal circuit • Stop light switch • ECM

WIRING DIAGRAM



HINT:
Read freeze frame data using the intelligent tester or the OBD II scan tool. The ECM records vehicle and driving condition information as freeze frame data the moment a DTC is stored. 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.

1 CHECK STOP LIGHT SWITCH

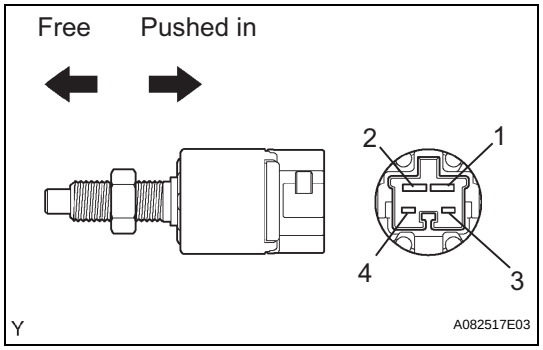
(a) Check if the stop lights turn on and off normally when the brake pedal is depressed and released.
OK:
The stop lights turn on when you depress the brake pedal.

NG → **REPAIR OR REPLACE STOP LIGHT SWITCH**

OK

ES

2 INSPECT STOP LIGHT SWITCH ASSEMBLY



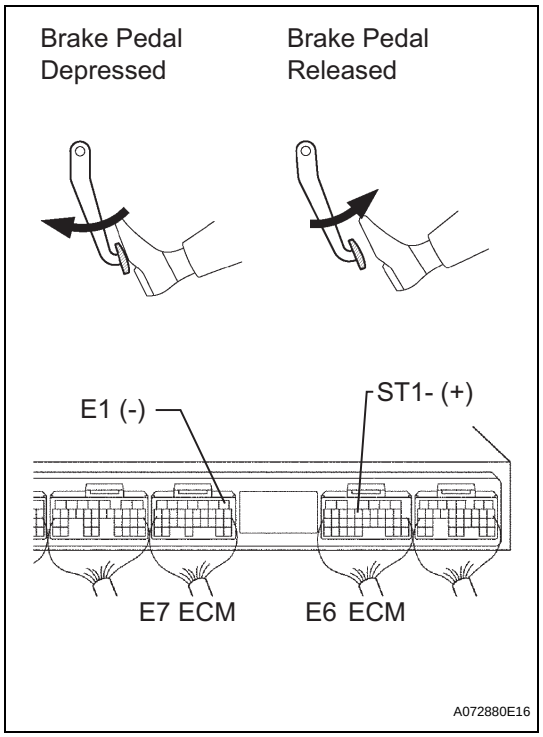
(a) Measure the resistance of the switch terminals.
Standard resistance

Switch condition	Tester Connection	Specified Condition
Switch pin free	1 - 2	Below 1 Ω
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 Ω

NG → **REPLACE STOP LIGHT SWITCH ASSEMBLY**

OK

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



(a) Turn the ignition switch ON.
(b) On the intelligent tester, enter the following menus: DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL / STOP LIGHT SW. Read the values.
Standard

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

(c) Measure the voltage of the ECM connectors.
Standard voltage

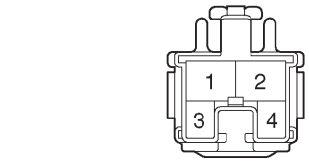
Tester Connection	Brake Pedal Condition	Specified Condition
E6-12 (ST1-) - E7-1 (E1)	Depressed	Below 1.5 V
E6-12 (ST1-) - E7-1 (E1)	Released	7.5 to 14 V

OK → **CHECK FOR INTERMITTENT PROBLEMS**

NG

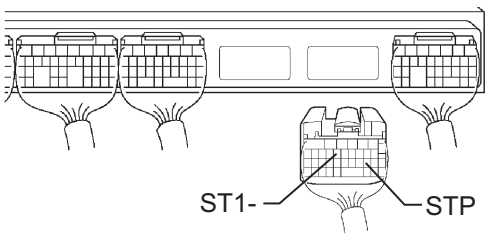
4	CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH - ECM)

Wire Harness Side:



S13 Stop Light Switch

E6 ECM



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(a) Disconnect the S13 stop light switch connector.
(b) Disconnect the E6 ECM connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S13-1 - E6-19 (STP) S13-4 - E6-12 (ST1-)	Below 1 Ω

(d) Reconnect the stop light switch connector and ECM connector.

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ECM

1	CHECK STOP LIGHT (OPERATION)

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

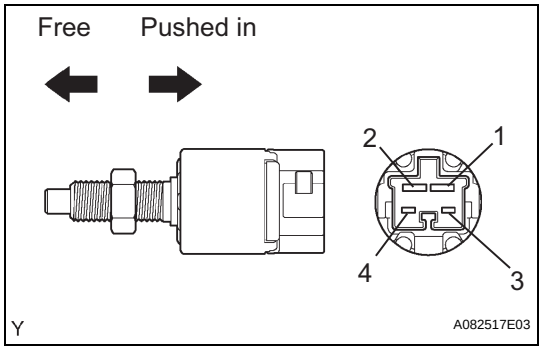
OK:

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

NG → **REPAIR OR REPLACE STOP LIGHT SWITCH CIRCUIT**

OK

2 INSPECT STOP LIGHT SWITCH ASSEMBLY



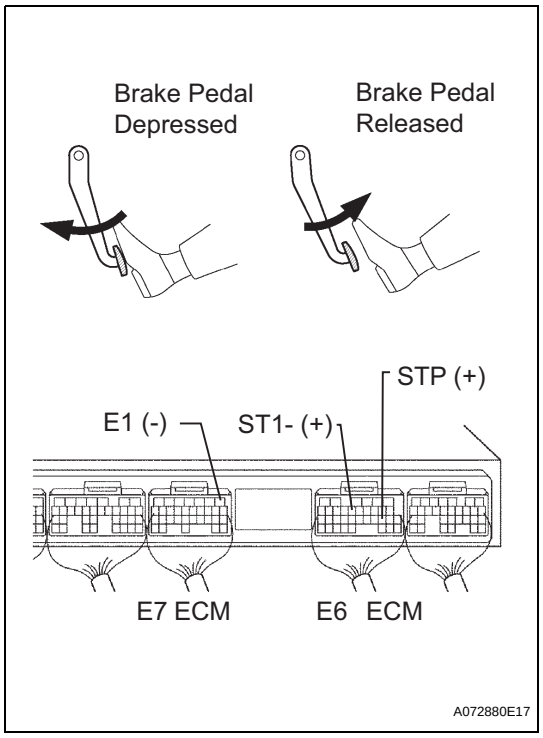
(a) Measure the resistance of the switch terminals.
Standard resistance

Switch condition	Tester Connection	Specified Condition
Switch pin free	1 - 2	Below 1 Ω
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 Ω

NG → REPLACE STOP LIGHT SWITCH ASSEMBLY

OK

3 INSPECT ECM (STP, ST1 - VOLTAGE)



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

Tester Connection	Brake Pedal Condition	Specified Condition
E6-19 (STP) - E7-1 (E1)	Depressed	7.5 to 14 V
E6-19 (STP) - E7-1 (E1)	Released	Below 1.5 V
E6-12 (ST1-) - E7-1 (E1)	Depressed	Below 1.5 V
E6-12 (ST1-) - E7-1 (E1)	Released	7.5 to 14 V

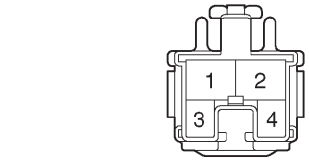
OK → CHECK FOR INTERMITTENT PROBLEMS

NG

ES

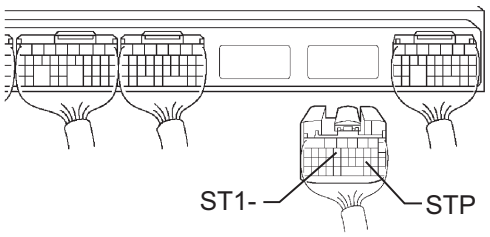
4	CHECK HARNESS AND CONNECTOR (STOP LIGHT SWITCH - ECM)

Wire Harness Side:



S13 Stop Light Switch

E6 ECM



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(a) Disconnect the S13 stop light switch connector.
(b) Disconnect the E6 ECM connector.
(c) Measure the resistance of the wire harness side connectors.

Standard resistance

Tester Connection	Specified Condition
S13-1 - E6-19 (STP) S13-4 - E6-12 (ST1-)	Below 1 Ω

(d) Reconnect the stop light switch connector and ECM connector.

NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

REPLACE ECM