DTC P0504/51 BRAKE SWITCH ”A”/”B” CORRELATION

CIRCUIT DESCRIPTION

In this system, signals of the stop lamp switch are used to judge whether the brake system is abnormal or not.

The stop lamp switch has a duplex system (signals STP and ST1–) to memorize the abnormality when the signals of depressing and releasing the brake pedal are detected simultaneously.

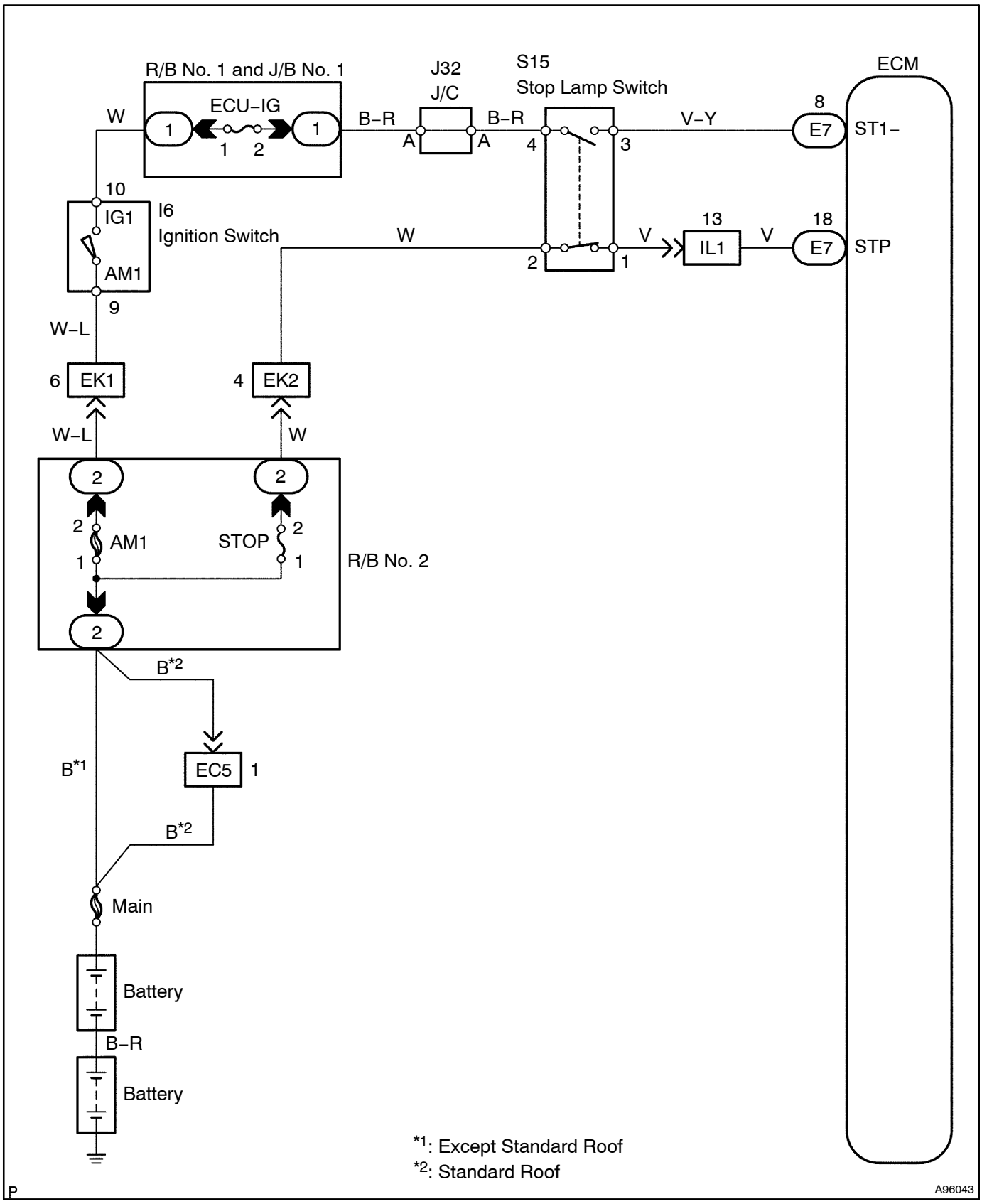
HINT:

Normal condition is as shown in the table below.

Signal	Brake Pedal Released	In Transition	Brake Pedal Depressed
STP	OFF	ON	ON
ST1–	ON	ON	OFF

DTC No.	DTC Detection Condition	Trouble Area
P0504/51	Conditions (a) and (b) continue for 0.5 second or more: (a) Ignition switch ON (b) Open or short in stop lamp switch signal circuit	• Short in stop lamp switch signal circuit • Stop lamp switch • ECM

WIRING DIAGRAM



INSPECTION PROCEDURE

HINT:
Read freeze frame data using the hand–held tester. 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.

When using hand–held tester:

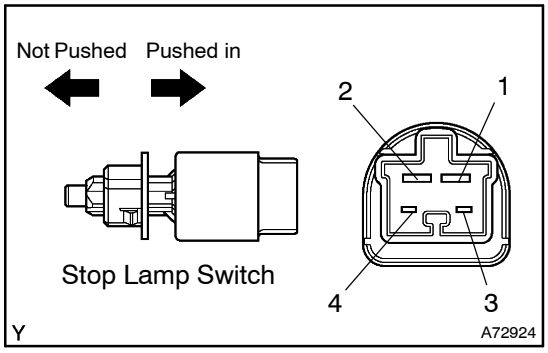
1	CHECK OPERATION OF STOP LAMP

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

OK → **REPAIR OR REPLACE STOP LAMP SWITCH CIRCUIT**

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2	INSPECT STOP LAMP SWITCH ASSY



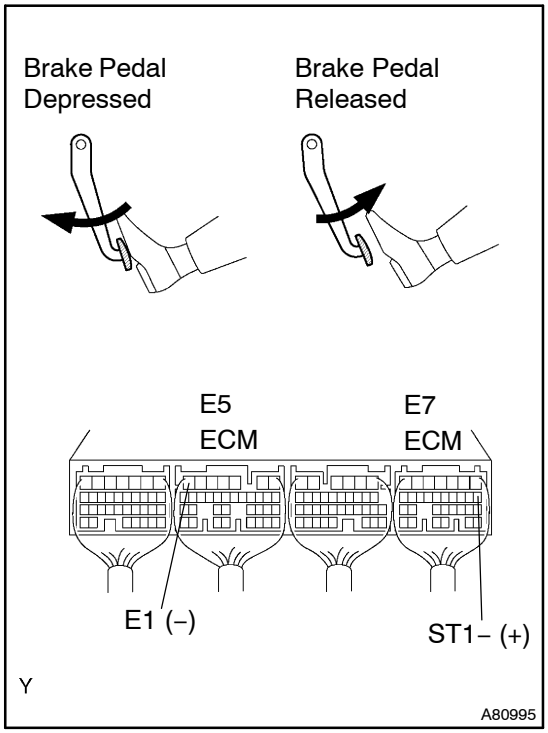
(a) Measure the resistance of the switch.
Standard:

Tester Condition	Switch Condition	Specified Condition
1 – 2	Pin not pushed	Below 1 Ω
3 – 4	Pin not pushed	10 kΩ or higher
1 – 2	Pin pushed in	10 kΩ or higher
3 – 4	Pin pushed in	Below 1 Ω

NG → **REPLACE STOP LAMP SWITCH ASSY**

OK

3 READ VALUE OF DATA LIST (STP SIGNAL AND ST1– VOLTAGE)



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

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

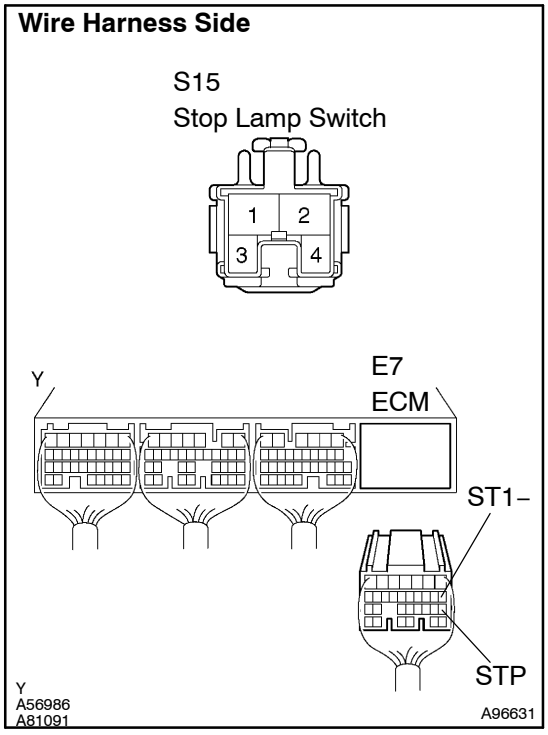
(c) Measure the voltage of the ECM connectors.
Standard:

Tester Connection	Brake Pedal Condition	Specified Condition
E7–8 (ST1–) – E5–7 (E1)	Depressed	Below 2 V
E7–8 (ST1–) – E5–7 (E1)	Released	18 to 27 V

OK → **CHECK FOR INTERMITTENT PROBLEMS (See page 05–10)**

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4 CHECK WIRE HARNESS (STOP LAMP SWITCH – ECM)



(a) Disconnect the S15 switch connector.
(b) Disconnect the E7 ECM connector.
(c) Measure the resistance of the wire harness side connectors.
Standard:

Tester Connection	Specified Condition
S15–1 (Stop lamp switch) – E7–18 (STP) S15–3 (Stop lamp switch) – E7–8 (ST1–)	Below 1 Ω

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

OK

REPLACE ECM (See page 10–10)

When not using hand–held tester:

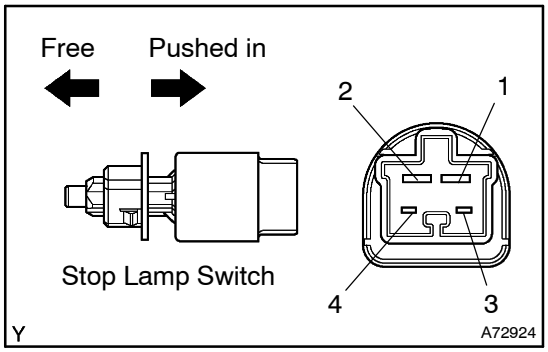
1 CHECK OPERATION OF STOP LAMP

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

NG → REPAIR OR REPLACE STOP LAMP SWITCH CIRCUIT

OK

2 INSPECT STOP LAMP SWITCH ASSY



(a) Measure the resistance of the switch.

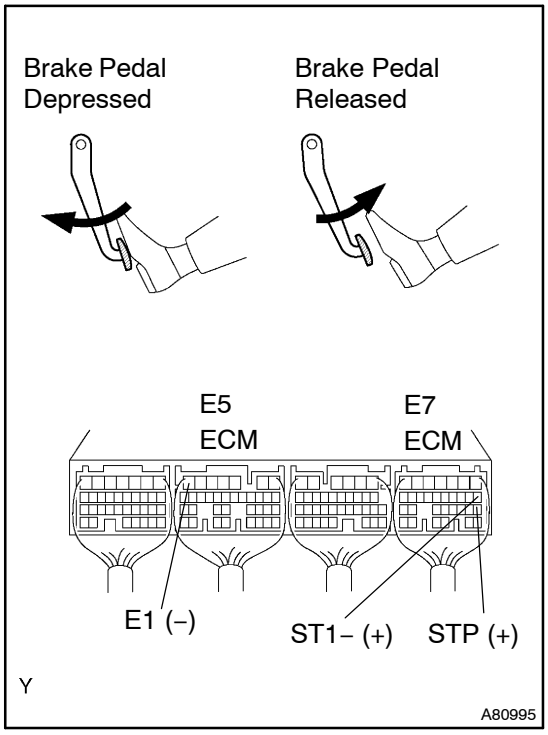
Standard:

Tester Condition	Switch Condition	Specified Condition
1 – 2	Pin not pushed	Below 1 Ω
3 – 4	Pin not pushed	10 kΩ or higher
1 – 2	Pin pushed in	10 kΩ or higher
3 – 4	Pin pushed in	Below 1 Ω

NG → REPLACE STOP LAMP SWITCH ASSY

OK

3 CHECK ECM (STP, ST1– VOLTAGE)



(a) Turn the ignition switch ON.

(b) Measure the voltage of the ECM connectors.

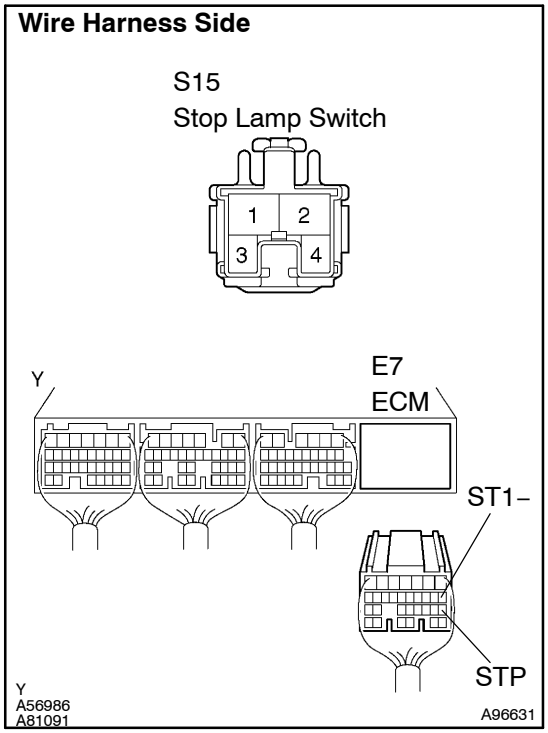
Standard:

Tester Connection	Brake Pedal Condition	Specified Condition
E7–18 (STP) – E5–7 (E1)	Depressed	18 to 27 V
E7–18 (STP) – E5–7 (E1)	Released	Below 2 V
E7–8 (ST1–) – E5–7 (E1)	Depressed	Below 2 V
E7–8 (ST1–) – E5–7 (E1)	Released	18 to 27 V

OK → CHECK FOR INTERMITTENT PROBLEMS (See page 05–10)

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4 CHECK WIRE HARNESS (STOP LAMP SWITCH – ECM)



(a) Disconnect the S15 stop lamp switch connector.
(b) Disconnect the E7 ECM connector.
(c) Measure the resistance of the wire harness side connectors.

Standard:

Tester Connection	Specified condition
S15–1 (Stop lamp switch) – E7–18 (STP) S15–3 (Stop lamp switch) – E7–8 (ST1–)	Below 1 Ω

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

OK

REPLACE ECM (See page 10–10)