DIC2K–03

DTC	P0504/51	Brake Switch ”A”/”B” Correlation

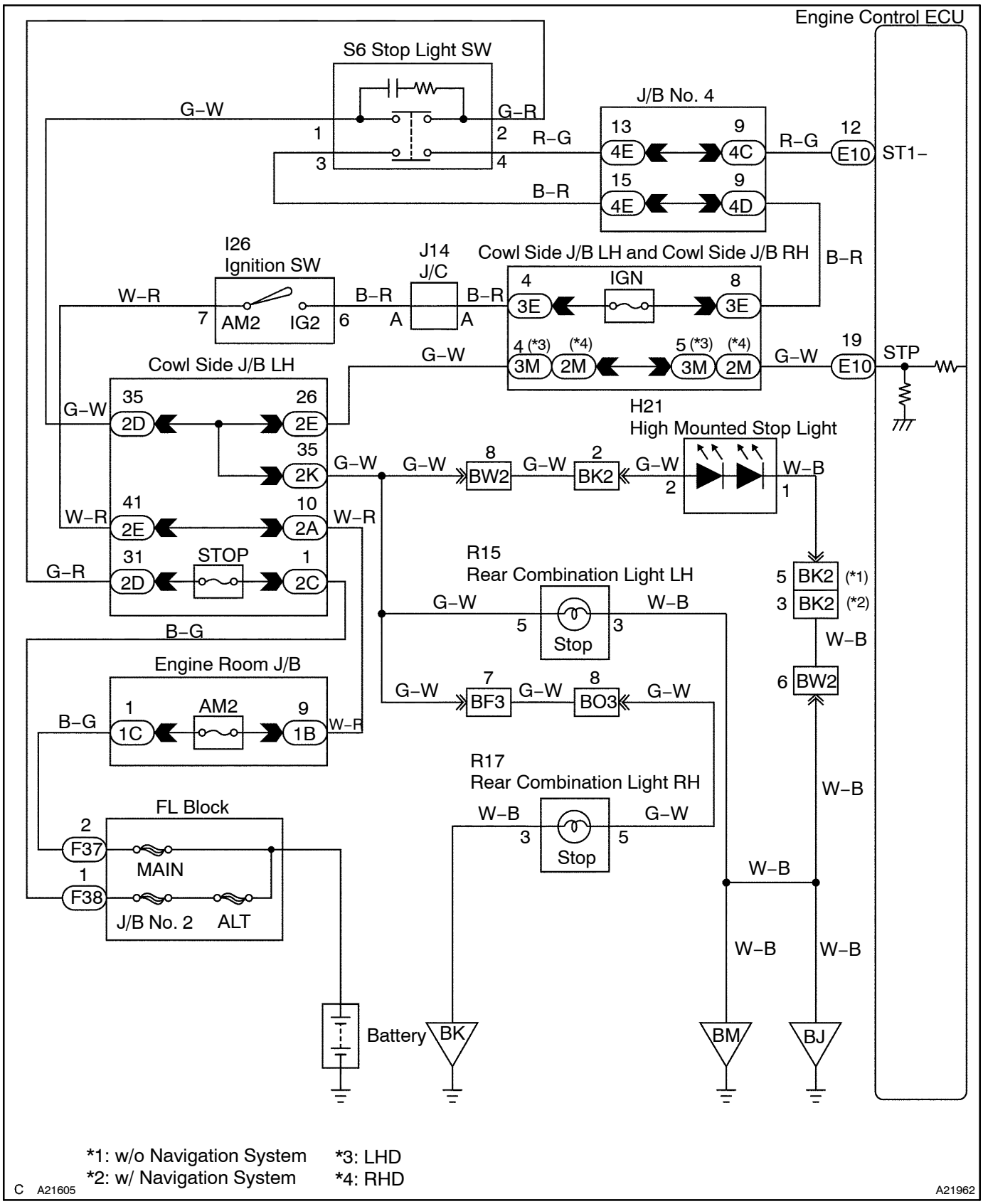
CIRCUIT DESCRIPTION

In addition to turning on the stop lamps, 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 engine control ECU 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
P0504/51	Conditions (a), (b) and (c) continue for 0.5 sec. or more: (a) Ignition switch ON (b) Brake pedal released (c) STP signal is OFF when the ST1– signal is OFF	• Short in stop lamp switch signal circuit • Stop lamp fuse • Stop lamp switch • Engine control ECU

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, as well as other data from the time when a malfunction occurred.

Hand–held tester:

1	**Check operation of stop light.**

CHECK:

Check if the stop lights come on and go off normally when the brake pedal is operated and released.

NG → **Check and repair stop light circuit.**

OK ↓

2	**Check STOP fuse.**

PREPARATION:

Remove the STOP fuse from the cowl side J/B LH.

CHECK:

Check the continuity of the STOP fuse.

OK:

Continuity

NG → **Check for short in all harness and components connected to STOP fuse.**

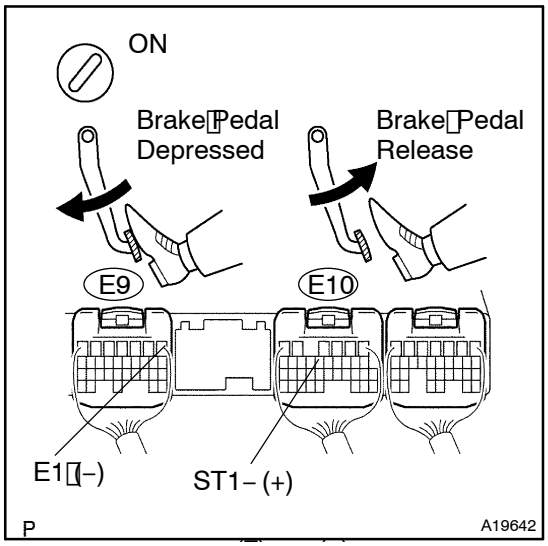
OK ↓

3	**Check stop light switch (See Pub. No. RM616E, page BE–56).**

NG → **Replace stop light switch.**

OK ↓

4	Check STP signal and ST1– voltage.



PREPARATION:

(a) Turn the ignition switch ON.

(b) Select the item "DIAGNOSIS / OBD/MOBD / DATA LIST / ALL / STOP LIGHT SW".

CHECK:

Read the signal displayed on the hand–held tester.

OK:

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

CHECK:

Measure the voltage between the specified terminals of the E9 and E10 engine control ECU connectors.

OK:

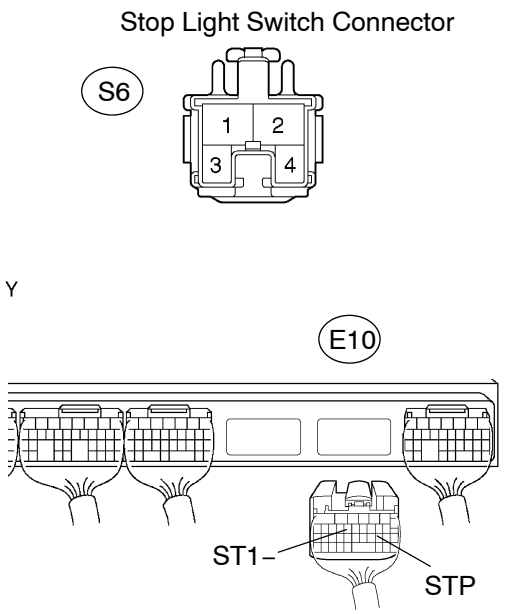
Tester Connection	Brake Pedal	Specified Condition
ST1 (E10–12) – E1 (E9–1)	Depressed	Below 1.5 V
	Released	7.5 to 14 V

OK → **Check for intermittent problems (See page DI–3).**

NG

5	**Check harness and connector between engine control ECU and stop light switch.**

Wire Harness Side:



PREPARATION:

(a) Disconnect the S6 stop light switch connector.

(b) Disconnect the E10 engine control ECU connector.

CHECK:

Measure the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
Stop light switch (S6–1) – STP (E10–19)	Below 1 Ω
Stop light switch (S6–4) – ST1– (E10–12)	Below 1 Ω
Stop light switch (S6–1) or STP (E10–19) – Body ground	10 kΩ or higher
Stop light switch (S6–4) or ST1– (E10–12) – Body ground	10 kΩ or higher

NG → **Repair or replace harness or connector.**

OK

Replace engine control ECU (See Pub. No. RM630E, page FI–74).

When not using hand–held tester:

1	**Check operation of stop light.**

CHECK:

Check if the stop lights come on and go off normally when the brake pedal is operated and released.

NG → **Check and repair stop light circuit.**

OK ↓

2	**Check STOP fuse.**

PREPARATION:

Remove the STOP fuse from the cowl side J/B LH.

CHECK:

Check the continuity of the STOP fuse.

OK:

Continuity

NG → **Check for short in all harness and components connected to STOP fuse.**

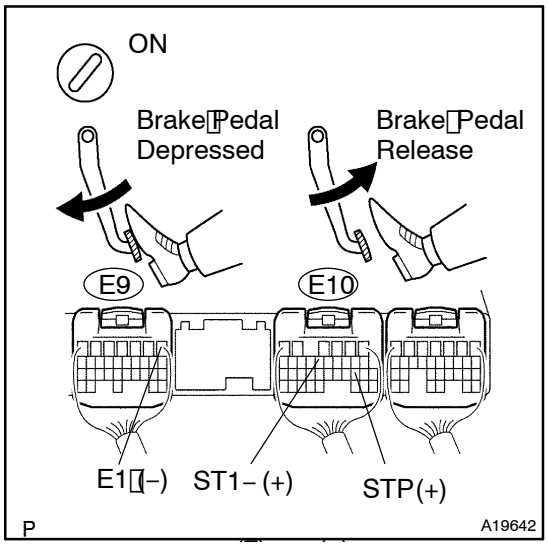
OK ↓

3	**Check stop light switch (See Pub. No. RM616E, page BE–56).**

NG → **Replace stop light switch.**

OK ↓

4	Check STP signal.



PREPARATION:

Turn the ignition switch ON.

CHECK:

Measure the voltage between the specified terminals of the E9 and E10 engine control ECU connectors.

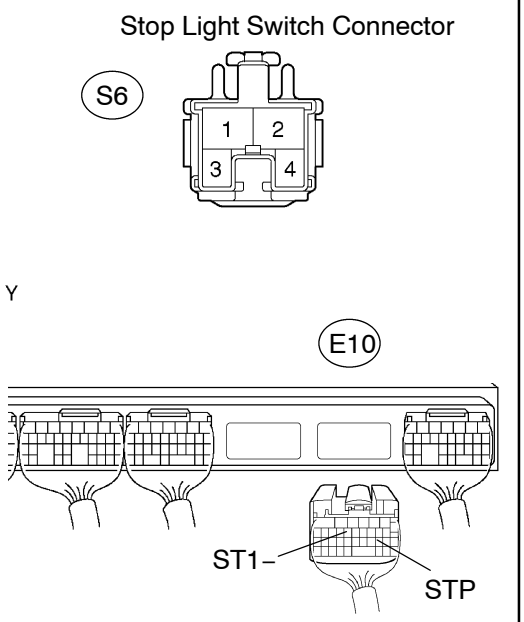
OK:

Tester Connection	Brake Pedal Position	Specified Condition
STP (E10–19) – E1 (E9–1)	Depressed	7.5 to 14 V
	Released	Below 1.5 V
ST1 (E10–12) – E1 (E9–1)	Depressed	Below 1.5 V
	Released	7.5 to 14 V

OK	Check for intermittent problems (See page DI–3).

NG

5	**Check harness and connector between engine control ECU and stop light switch.**



PREPARATION:

(a) Disconnect the S6 stop light switch connector.

(b) Disconnect the E10 engine control ECU connector.

CHECK:

Measure the resistance between the wire harness side connectors.

OK:

Tester Connection	Specified Condition
Stop light switch (S6–1) – STP (E10–19)	Below 1 Ω
Stop light switch (S6–4) – ST1– (E10–12)	Below 1 Ω
Stop light switch (S6–1) or STP (E10–19) – Body ground	10 kΩ or higher
Stop light switch (S6–4) or ST1– (E10–12) – Body ground	10 kΩ or higher

NG → **Repair or replace harness or connector.**

OK

Replace engine control ECU (See Pub. No. RM630E, page FI–74).