

<b>DTC</b>	<b>P0504</b>	<b>Brake Switch "A"/"B" Correlation</b>
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## 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 STI-. 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
STI-	ON	ON	OFF

DTC No.	DTC Detection Condition	Trouble Area
P0504	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 STI- signal is OFF	<ul style="list-style-type: none"> <li>• Short in stop lamp switch signal circuit</li> <li>• Stop lamp fuse</li> <li>• Stop lamp switch</li> <li>• ECM</li> </ul>

**Wiring Diagram for 2002-2004 Ford F-150 4.6L V8**

**Legend:**

- \*1: Towing Package
- \*2: Except Towing Package
- \*3: w/ VSC
- \*4: w/o VSC

**Key Components and Connections:**

- I23 Ignition SW:** Controls the ignition system via B-Y and B-R wires.
- Driver Side J/B:** Junction box for the driver's side, containing fuses 1I, 1G, 1F, 1D, 1A, and 1J.
- S4 Stop Light SW:** Stop light switch connected to the ECM (ECM 16, 15) and the stop light relay.
- S31 Stop Light Relay:** Relay that controls the stop lights, connected to the ECM and the stop light bulbs (IF, BL).
- ECM (Engine Control Module):** Receives signals from the stop light switch and controls the stop light relay.
- Engine Room R/B:** Relay box containing fuses 1F, 1K, 1D, 1H, 1A, and 1J.
- Battery:** Power source for the system, connected to the ground and the stop light relay.

## 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.

<b>1</b>	<b>Check operation of stop light.</b>
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### CHECK:

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

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Check and repair stop light circuit.

OK

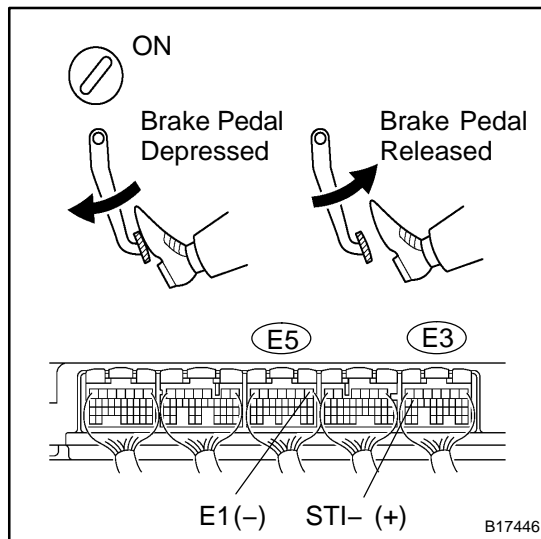
<b>2</b>	<b>Check stop light switch (See page <a href="#">BE-70</a>).</b>
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Replace stop light switch.

OK

### 3 Check STP signal and STI- voltage.



#### PREPARATION:

- Connect the hand-held tester to the DLC3.
- Turn the ignition switch to ON.
- Select the item "DIAGNOSIS / ENHANCED OBD II / DATA LIST / ALL / STOP LIGHT SW".

#### CHECK:

Read the signal displayed on the hand-held tester.

#### OK:

##### Standard:

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

#### CHECK:

Measure the voltage between the specified terminals of the E3 and E5 ECM connectors.

#### OK:

##### Standard:

Tester Connection	Brake Pedal	Specified Condition
STI- (E3-16) – E1 (E5-1)	Depressed	Below 1.5 V
STI- (E3-16) – E1 (E5-1)	Released	7.5 to 14 V

OK

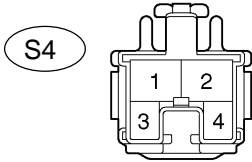
Check for intermittent problems (See page [DI-11](#)).

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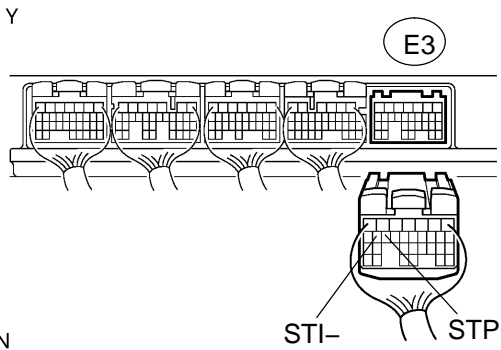
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Check harness and connector between ECM and stop light switch.

Wire Harness Side:



Stop Light Switch Connector



A23478

**PREPARATION:**

- (a) Disconnect the S4 stop light switch connector.
- (b) Disconnect the E3 ECM connector.

**CHECK:**

Measure the resistance between the wire harness side connectors.

**OK:**

**Standard:**

Tester Connection	Specified Condition
Stop light switch (S4-1) – STP (E3-15)	Below 1 $\Omega$
Stop light switch (S4-4) – STI- (E3-16)	Below 1 $\Omega$
Stop light switch (S4-1) or STP (E3-15) – Body ground	10 k $\Omega$ or higher
Stop light switch (S4-4) or STI- (E3-16) – Body ground	10 k $\Omega$ or higher

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Repair or replace harness or connector.

OK

Replace ECM (See page [SF-66](#)).