

Headlight Relay Circuit

DESCRIPTION

The multiplex network body ECU controls headlight relay (H-LP R, H-LP L) when signal is received from the headlight dimmer switch assembly.

The headlight relay installed in the power distributor.

1. Description

- (a) The power distributor installed in the J/B No. 2 uses the no-contact type relay with a semiconductor.
- (b) The power distributor has a function to protect the power distributor circuit if overcurrent is applied to the power distributor or overheating occurs.
 - * Malfunction is detected in the wire harness connected to the J/B No. 2.
 - * Malfunction is detected in the interior relay of the J/B No. 2.
- (c) The power distributor has a mode monitor terminal for external checking of the operating condition (normal or protect condition) of the power distributor.
- (d) The operating condition (normal or protect condition) of the semiconductor relay can be checked using the output voltage from the mode monitor terminal.

NOTICE:

Check that no DTCs are output in the ABS and VSC motor relay.

If any DTC (C0273/13, C0274/14, C1361/91) is detected, inspect the ABS and VSC motor relay in accordance with the troubleshooting of the brake system. (See page BC-39)

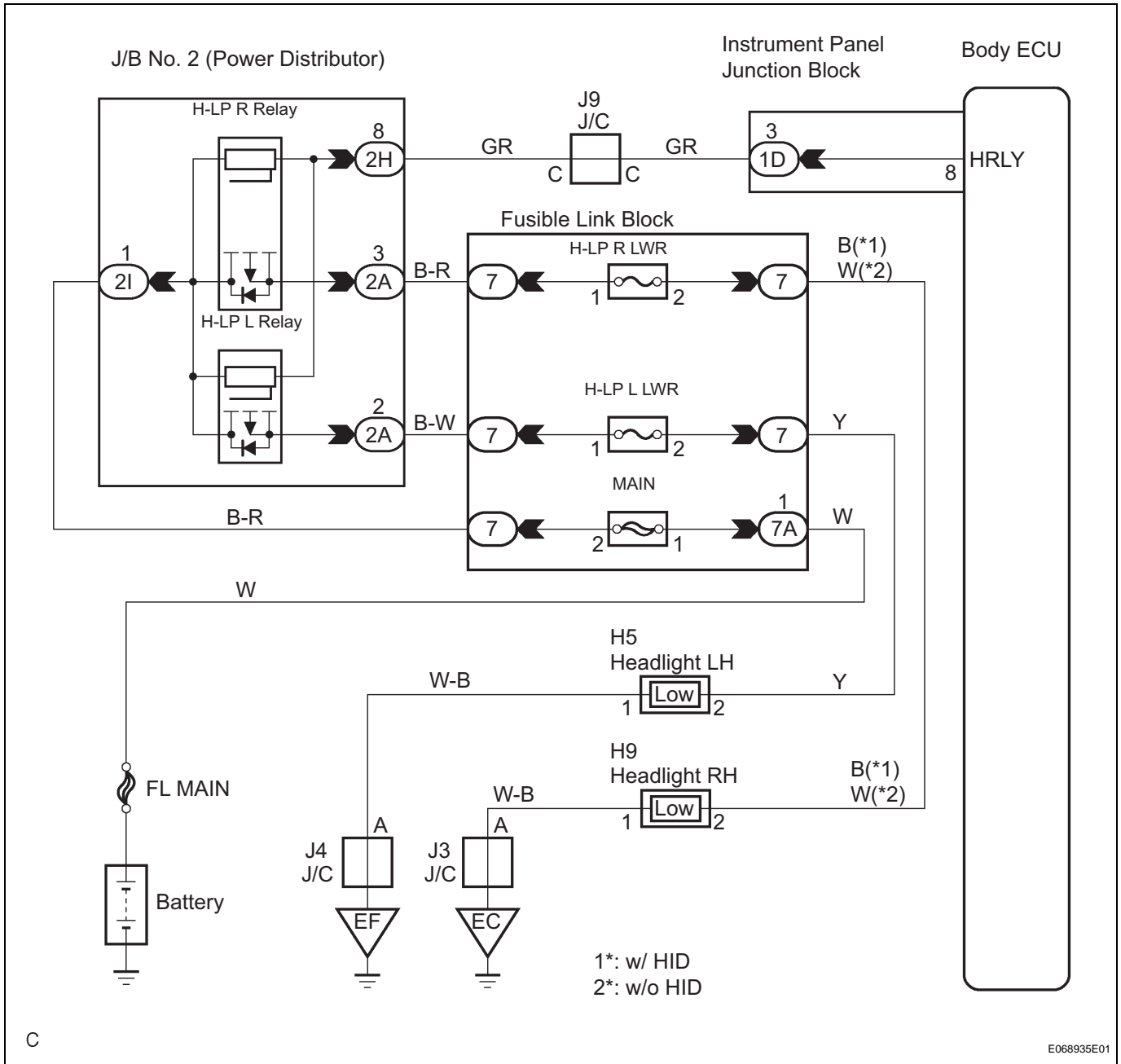
- (e) When the semiconductor relay is operation normally, the mode monitor terminal outputs approximately 6 V. When the semiconductor relay operates in protect mode, the mode monitor terminal outputs about 0 V. However, the mode monitor terminal outputs for the overall operating condition of the power distributor, so it is not possible to specify the semiconductor relay during protect operation.
 - (f) When the fail-safe function operates, the power distributor performs the following operations:
 - * Stops the operation of the troubled semiconductor relay only.
 - * Stops the power supply to the troubled semiconductor relay circuit only.

HINT:
Normal semiconductor relay or circuit operates properly.
 - (g) While the fail-safe function operates, check for a short circuit in the following areas:
 - * Wire harness driven by relay on the terminal side and body ground.
 - * Inside the power distributor (including the semiconductor relay)
- #### 2. Recovery from Fail-Safe
- (a) The power distributor soon restores the semiconductor relay function, but if a load abnormality still continues, the power distributor again stops the semiconductor relay function. (except Rr-DEF Relay)
 - (b) The power distributor and the semiconductor relay function stop until the rear defogger switch turns on again.

Then the rear defogger switch turns on again, the semiconductor relay function recovers, but if the load abnormality is not corrected by this time, the Power Distributor again stops the semiconductor relay function.

If the load abnormality is corrected, the semiconductor relay function recovers when the rear defogger switch turns on again. (Rr-DEF Relay)

WIRING DIAGRAM



HINT:

Start the inspection from step 1 when using the intelligent tester, and start from step 2 when not using the intelligent tester.

1 PERFORM ACTIVE TEST BY INTELLIGENT TESTER

- (a) Connect the intelligent tester to the DLC3.
- (b) Turn the ignition switch to ON position and press the intelligent tester main switch ON.

- (c) Select the item below in the ACTIVE TEST and then check that the relay operates.

BODY No. 1

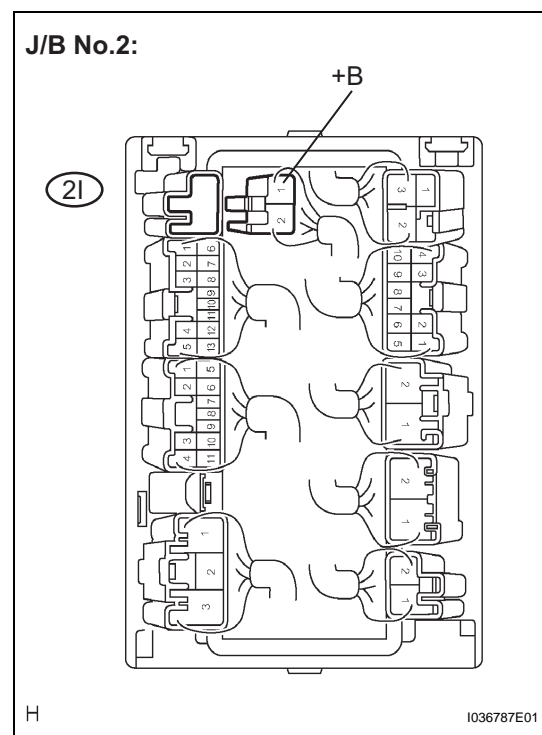
Item	Test Details	Diagnostic Note
HEAD LIGHT	Turn Headlight relay ON/OFF	-

NG → **Go to step 2**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

2 CHECK HARNESS AND CONNECTOR (POWER SOURCE CIRCUIT)



- (a) Disconnect the connector from the J/B No. 2 (power distributor).
 (b) Measure the voltage according to the value(s) in the table below.

Voltage

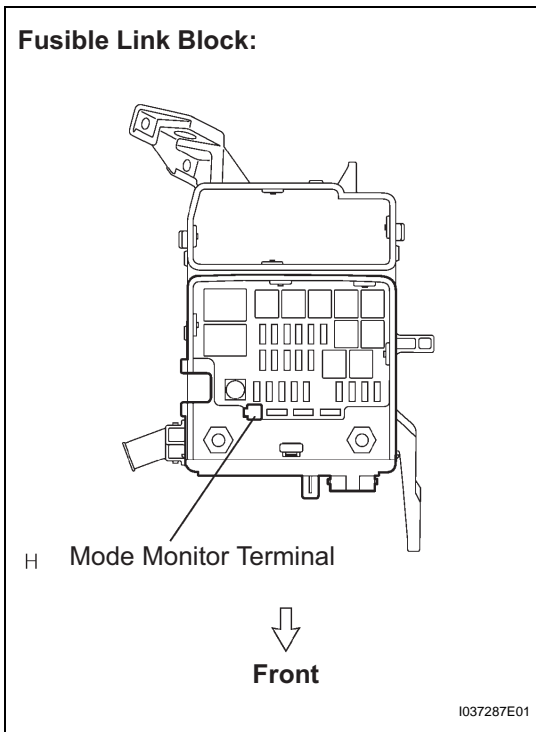
Tester connection	Condition	Specified value
2l-1 (+B) - Body ground	Always	10 to 14 V

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

OK

3 CHECK MODE MONITOR TERMINAL (H-LP R RELAY, H-LP L RELAY)

- (a) Preparation
- (1) Connect the connector.
 - (2) Remove the cover of the fusible link block assembly.
 - (3) Set the vehicle to the following condition.
 - Ignition switch ON.
 - Headlight dimmer switch LO.
 - Light control switch ON.



- (b) Check voltage
 - (1) Measure the voltage between the Mode Monitor Terminal and body ground.

RESULT

Condition	Proceed to
6.3 +- 2V	A
Approx. 1 V	B

B → **Go to step 9**

A

4 INSPECT JUNCTION BLOCK NO.2 (HEAD LIGHT RELAY)

- (a) Turn the ignition switch to OFF position.
- (b) Remove the J/B No.2.
- (c) Inspect the H-LP R.



- (b) Measure the voltage according to the value(s) in the table below.

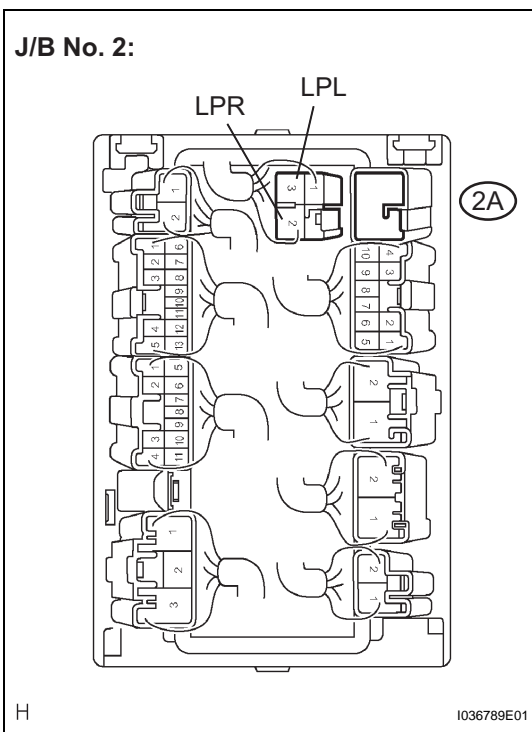
Voltage

Tester connection	Condition	Specified value
1D-3 - Body ground	Always	10 to 14 V

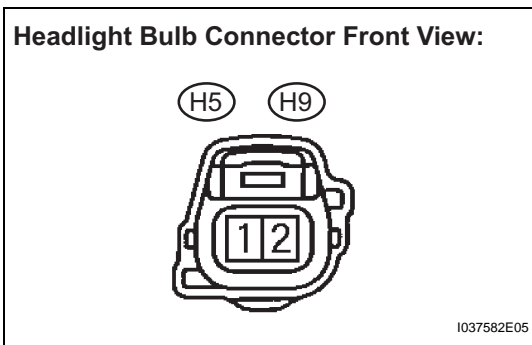
NG → **Go to step 8**

OK

6 CHECK HARNESS AND CONNECTOR (J/B NO. 2 - BULB)



- (a) Disconnect the connector from the J/B No. 2 (power distributor).



- (b) Disconnect the connectors from the headlight bulbs.
 (c) Measure the resistance according to the value(s) in the table below.

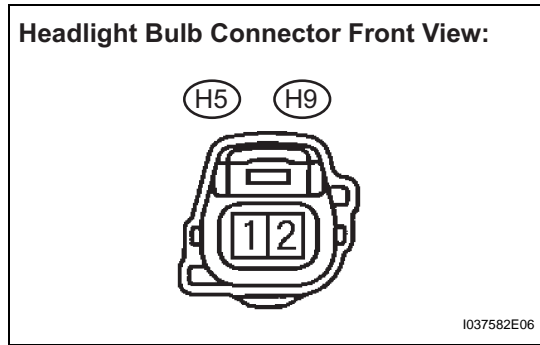
Resistance

Tester connection	Condition	Specified value
2A-2 (LPL) - H5-2 (Headlight LH)	Always	Below 1 Ω
2A-3 (LPL) - H9-2 (Headlight RH)	Always	Below 1 Ω
2A-2 (LPL) - Body ground	Always	10 kΩ or higher
2A-3 (LPL) - Body ground	Always	10 kΩ or higher

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

OK

7 CHECK HARNESS AND CONNECTOR (BULB - BODY GROUND)



- (a) Measure the resistance according to the value(s) in the table below.

Resistance

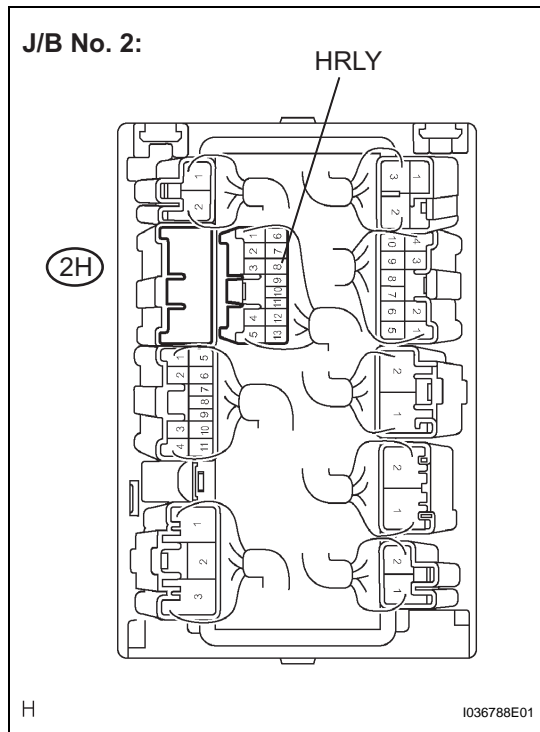
Tester connection	Condition	Specified value
H5-1 (Headlight LH) - Body ground	Always	Below 1 Ω
H9-1 (Headlight RH) - Body ground	Always	Below 1 Ω

NG REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

8 CHECK HARNESS AND CONNECTOR (J/B NO. 2 - INSTRUMENT PANEL J/B)



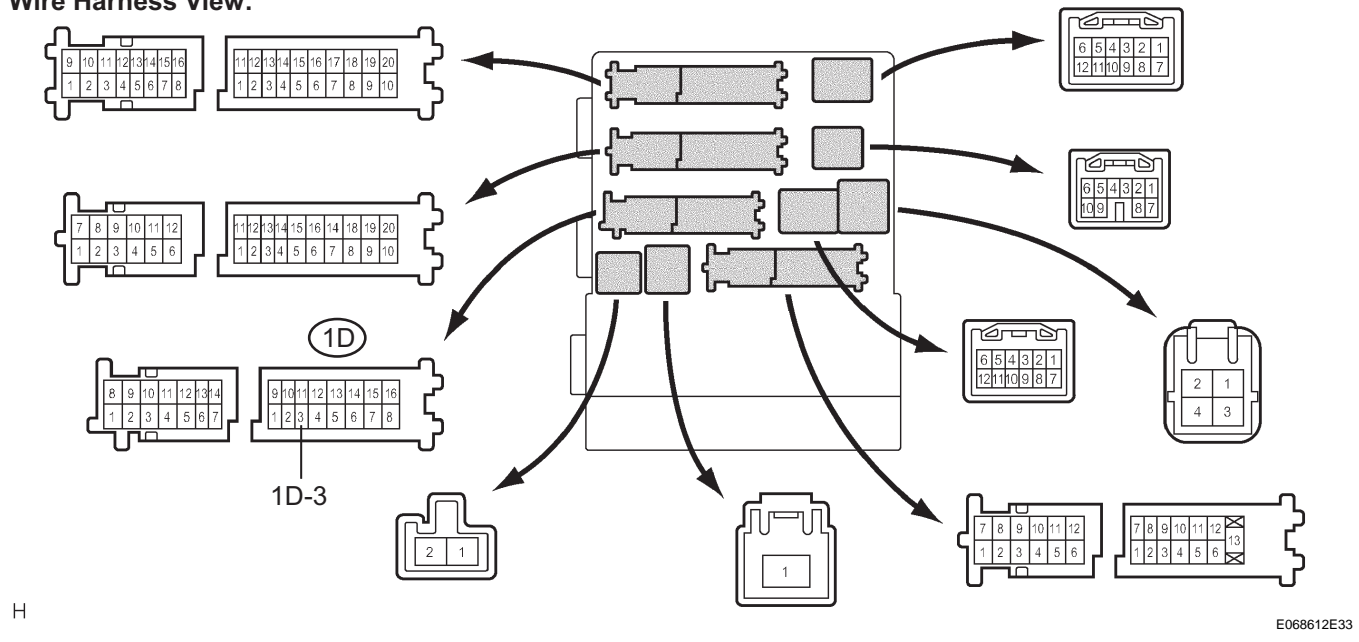
- (a) Disconnect the connectors from the J/B No. 2 (power distributor) and instrument panel J/B.
 (b) Measure the resistance according to the value(s) in the table below.

Resistance

Tester connection	Condition	Specified value
2H-8 (HRLY) - 1D-3	Always	Below 1 Ω
2H-8 (HRLY) - Body ground	Always	10 kΩ or higher

Instrument Panel Junction Block Assembly Front Side

Wire Harness View:



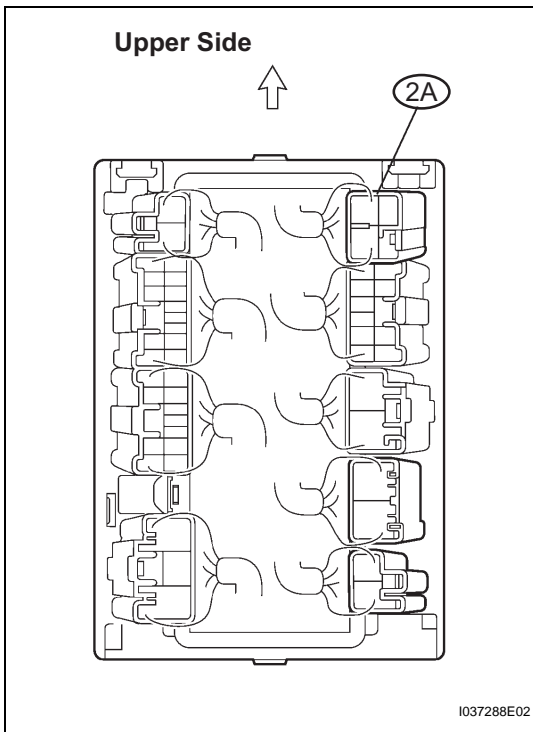
NG → **REPAIR OR REPLACE HARNESS OR CONNECTOR**

OK

PROCEED TO NEXT CIRCUIT INSPECTION SHOWN IN PROBLEM SYMPTOMS TABLE

9 CHECK HARNESS AND CONNECTOR (SHORT CIRCUIT DRIVEN SIDE BY RELAY)

- (a) Preparation
 - (1) For easier disconnection remove the J/B No.2 and then take apart the connectors.



- (2) Disconnect only the connector "2A".
- (b) Check voltage
 - (1) Measure the voltage between the Mode Monitor Terminal and body ground.

RESULT

Condition	Proceed to
6.3 +- 2 V	A
Approx. 1 V	B

B → **REPLACE JUNCTION BLOCK NO.2**

A

REPAIR OR REPLACE HARNESS OR CONNECTOR (SHORT CIRCUIT BETWEEN HEADLIGHT LO AND J/B NO.2)

