


ON-VEHICLE INSPECTION

1. INSPECT COOLING FAN SYSTEM

- (a) Connect the Techstream to the DLC3.
- (b) Turn the power switch on (IG).
- (c) Enter the following menus: Powertrain / Engine / Active Test / Control the Electric Cooling Fan.
- (d) Check operation of the cooling fans while operating them using the Techstream. If the cooling fans do not operate, check the cooling fan circuit .

DESCRIPTION

The ECM turns on or off the fan relays using signals calculated from the engine coolant temperature, air conditioning switch (on/off), air conditioning refrigerant pressure, engine speed, and vehicle speed signals.

The ECM switches the circuit of the cooling fan motors between series and parallel by turning on or off the fan relays in order to control the speed of the cooling fan motors in two steps.

WIRING DIAGRAM

Refer to System Diagram .

INSPECTION PROCEDURE

NOTICE:

Inspect the fuses for circuits related to this system before performing the following inspection procedure.

PROCEDURE

1. PERFORM ACTIVE TEST USING TECHSTREAM (CONTROL THE ELECTRIC COOLING FAN)

- (a) Connect the Techstream to the DLC3.
- (b) Turn the power switch on (IG).
- (c) Turn the Techstream on.
- (d) Enter the following menus: Powertrain / Engine and ECT / Active Test / Control the Electric Cooling Fan.

OK:

Tester Operation	Specified Condition
ON	Fans operate
OFF	Fans do not operate

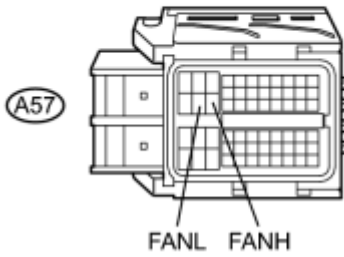
NG  [INSPECT ECM \(FANL AND FANH VOLTAGE\)](#)

OK  **PROCEED TO NEXT SUSPECTED AREA SHOWN IN PROBLEM SYMPTOMS TABLE**

2. INSPECT ECM (FANL AND FANH VOLTAGE)

- (a) Disconnect the ECM connector.

*1



N

(b) Turn the power switch on (IG).

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

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
A57-22 (FANH) - Body ground	Power switch on (IG)	11 to 14 V
A57-21 (FANL) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

*1	Front view of wire harness connector (to ECM)
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(d) Reconnect the ECM connector.

NG  [CHECK FUSE \(ECU-IG NO. 1 FUSE VOLTAGE\)](#)

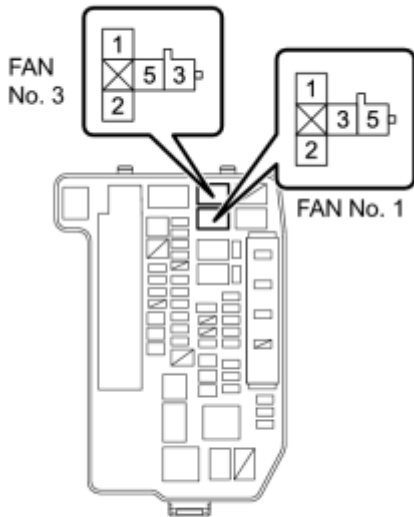
OK



3.	INSPECT ENGINE ROOM RELAY BLOCK (FAN NO. 1 RELAY AND FAN NO. 3 RELAY VOLTAGE)
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(a) Remove the FAN No. 1 relay and FAN No. 3 relay from the engine room relay block.

*1



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

Standard Voltage:

Tester Connection	Condition	Specified Condition
3 (FAN No. 1 relay) - Body ground	Always	11 to 14 V
5 (FAN No. 3 relay) - Body ground	Always	11 to 14 V

Text in Illustration

*1	Engine Room Relay Block
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(c) Reinstall the FAN No. 1 relay and FAN No. 3 relay.

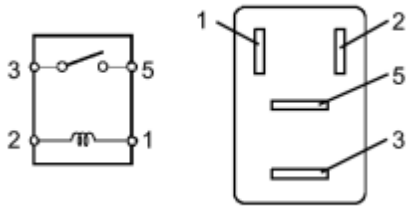
NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR (BATTERY - ENGINE ROOM RELAY BLOCK)

OK



4.	INSPECT FAN NO. 1 RELAY
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(a) Remove the FAN No. 1 relay from the engine room relay block.



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

Standard Resistance:

Tester Connection	Condition	Specified Condition
3 - 5	Battery voltage is not applied between terminals 1 and 2	10 k Ω or higher
	Battery voltage is applied between terminals 1 and 2	Below 1 Ω

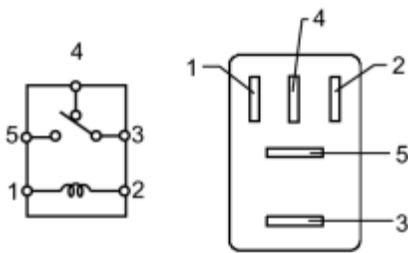
(c) Reinstall the FAN No. 1 relay.

NG REPLACE FAN NO. 1 RELAY

OK



5.	INSPECT FAN NO. 2 RELAY
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(a) Remove the FAN No. 2 relay from the engine room relay block.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
3 - 4	Battery voltage is not applied between terminals 1 and 2	Below 1 Ω
	Battery voltage is applied between terminals 1 and 2	10 k Ω or higher
3 - 5	Battery voltage is not applied between terminals 1 and 2	10 k Ω or higher
	Battery voltage is applied between terminals 1 and 2	Below 1 Ω

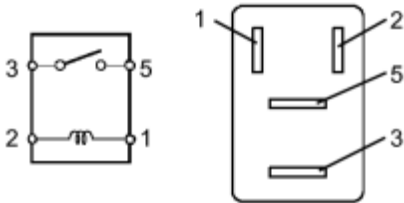
(c) Reinstall the FAN No. 2 relay.

NG ► REPLACE FAN NO. 2 RELAY

OK



6.	INSPECT FAN NO. 3 RELAY
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(a) Remove the FAN No. 3 relay from the engine room relay block.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
3 - 5	Battery voltage is not applied between terminals 1 and 2	10 k Ω or higher
	Battery voltage is applied between terminals 1 and 2	Below 1 Ω

(c) Reinstall the FAN No. 3 relay.

NG ► REPLACE FAN NO. 3 RELAY

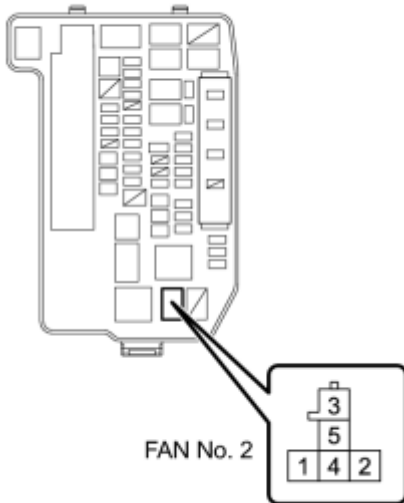
OK



7.	CHECK HARNESS AND CONNECTOR (FAN NO. 2 RELAY - BODY GROUND)
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(a) Remove the FAN No. 2 relay from the engine room relay block.

*1



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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
5 (FAN No. 2 relay) - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Engine Room Relay Block
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(c) Reinstall the FAN No. 2 relay.

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR (FAN NO. 2 RELAY - BODY GROUND)

OK



8.	INSPECT COOLING FAN MOTOR
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(a) Disconnect the cooling fan motor connector.



c

(b) Check that the cooling fan motor operates smoothly when the battery is connected to the cooling fan motor connector.

(c) Measure the current while the motor is operating.

Standard Current:

Tester Connection	Condition	Specified Condition
1 - 2	Always	11.2 to 14.5 A

Text in Illustration

*1	Component without harness connected (Cooling Fan Motor)
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(d) Reconnect the cooling fan motor connector.

NG  REPLACE COOLING FAN MOTOR

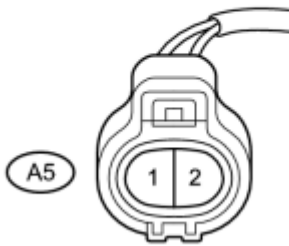
OK



9.	CHECK HARNESS AND CONNECTOR (COOLING FAN MOTOR - BODY GROUND)
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(a) Disconnect the cooling fan motor connector.

*1



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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
A5-1 - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Front view of wire harness connector (to Cooling Fan Motor)
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(c) Reconnect the cooling fan motor connector.

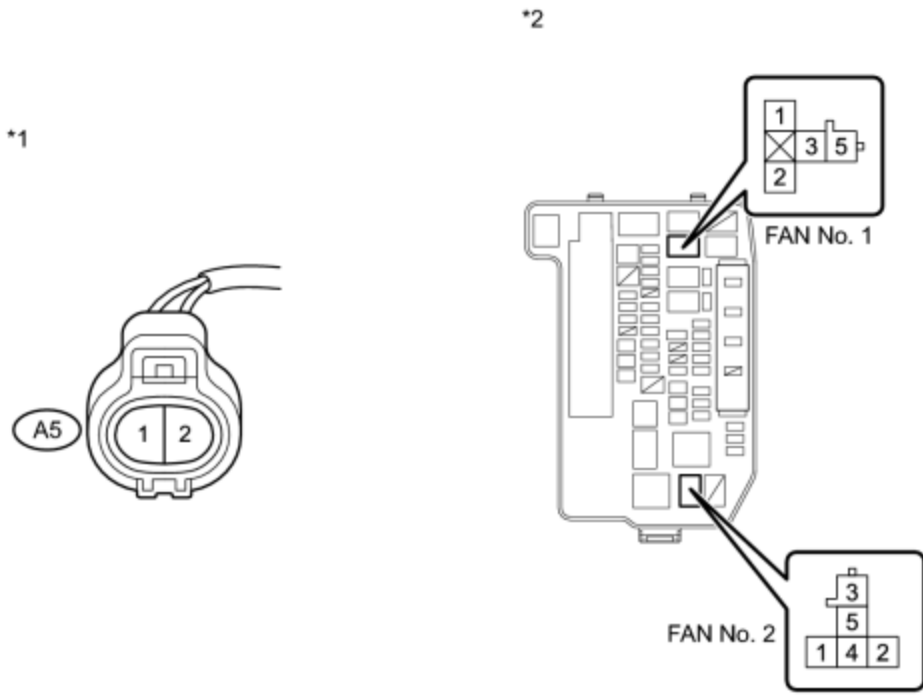
NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR (COOLING FAN MOTOR - BODY GROUND)

OK



10.	CHECK HARNESS AND CONNECTOR (COOLING FAN MOTOR - ENGINE ROOM RELAY BLOCK)
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(a) Disconnect the cooling fan motor connector.



(b) Remove the FAN No. 1 relay and FAN No. 2 relay from the engine room relay block.

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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
A5-2 - 5 (FAN No. 1 relay)	Always	Below 1 Ω
A5-2 - 4 (FAN No. 2 relay)	Always	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Condition	Specified Condition
A5-2 or 5 (FAN No. 1 relay) - Body ground	Always	10 kΩ or higher
A5-2 or 4 (FAN No. 2 relay) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to Cooling Fan Motor)
*2	Engine Room Relay Block

(d) Reconnect the cooling fan motor connector.

(e) Reinstall the FAN No. 1 relay and FAN No. 2 relay.

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR (COOLING FAN MOTOR - ENGINE ROOM RELAY BLOCK)

OK



11.	INSPECT NO. 2 COOLING FAN MOTOR
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*1



(a) Disconnect the No. 2 cooling fan motor connector.

c

(b) Check that the No. 2 cooling fan motor operates smoothly when the battery is connected to the No. 2 cooling fan motor connector.

(c) Measure the current while the motor is operating.

Standard Current:

Tester Connection	Condition	Specified Condition
1 - 2	Always	7.4 to 10.9 A

Text in Illustration

*1	Component without harness connected (No. 2 Cooling Fan Motor)
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(d) Reconnect the No. 2 cooling fan fan motor connector.

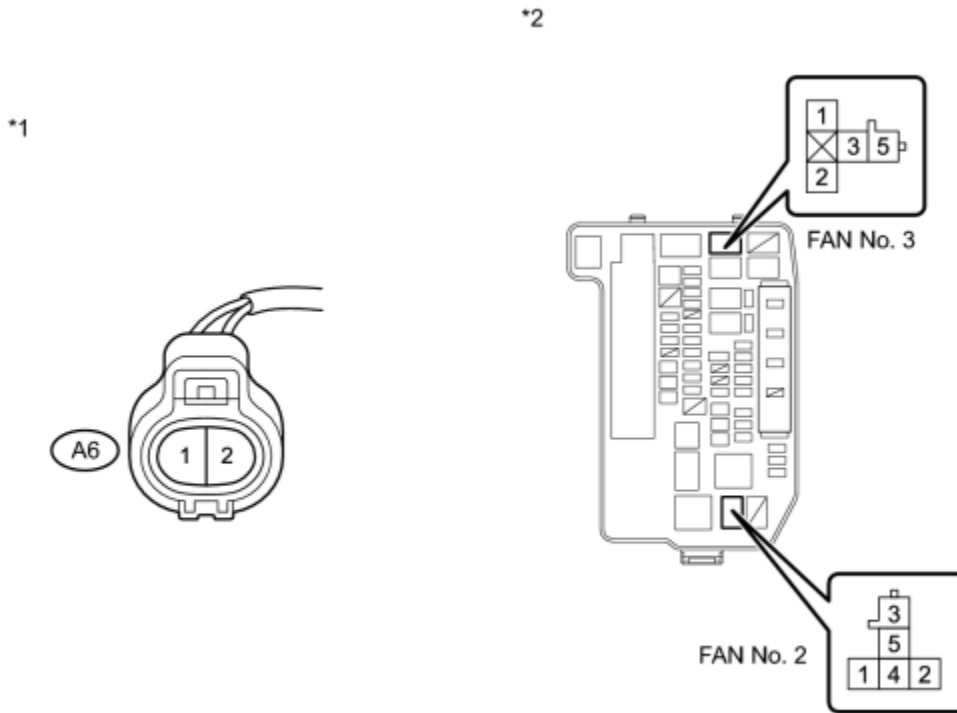
NG ► REPLACE NO. 2 COOLING FAN MOTOR

OK



12.	CHECK HARNESS AND CONNECTOR (NO. 2 COOLING FAN MOTOR - ENGINE ROOM RELAY BLOCK)
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(a) Disconnect the No. 2 cooling fan motor connector.



(b) Remove the FAN No. 2 relay and FAN No. 3 relay from the engine room relay block.

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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
A6-1 - 3 (FAN No. 2 relay)	Always	Below 1 Ω
A6-2 - 3 (FAN No. 3 relay)	Always	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Condition	Specified Condition
A6-1 or 3 (FAN No. 2 relay) - Body ground	Always	10 kΩ or higher
A6-2 or 3 (FAN No. 3 relay) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to No. 2 Cooling Fan Motor)
*2	Engine Room Relay Block

(d) Reconnect the No. 2 cooling fan motor connector.

(e) Reinstall the FAN No. 2 relay and FAN No. 3 relay.

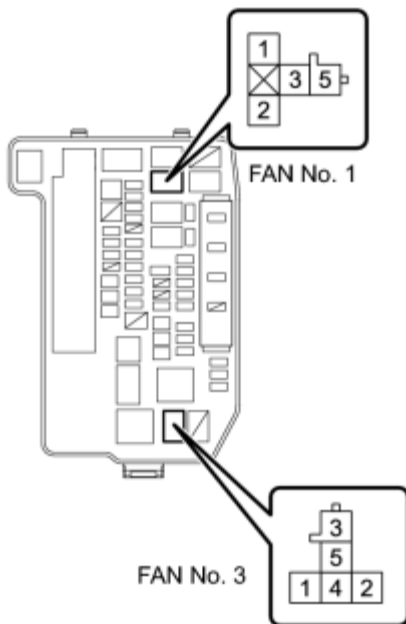
NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR (NO. 2 COOLING FAN MOTOR - ENGINE ROOM RELAY BLOCK)

OK



13.	INSPECT ENGINE ROOM RELAY BLOCK (FAN NO. 1 RELAY - FAN NO. 2 RELAY)
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*1



(a) Remove the FAN No. 1 relay and FAN No. 2 relay from the engine room relay block.

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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
1 (FAN No. 1 relay) - 1 (FAN No. 2 relay)	Always	Below 1 Ω

Tester Connection	Condition	Specified Condition
2 (FAN No. 1 relay) - 2 (FAN No. 2 relay)	Always	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Condition	Specified Condition
1 (FAN No. 1 relay) or 1 (FAN No. 2 relay) - Body ground	Always	10 kΩ or higher
2 (FAN No. 1 relay) or 2 (FAN No. 2 relay) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Engine Room Relay Block
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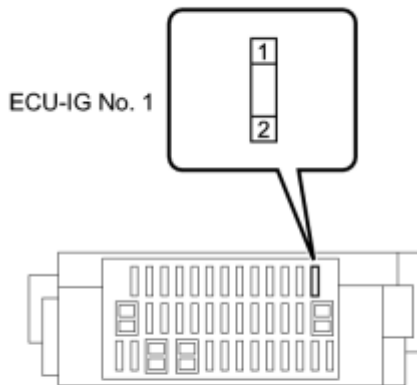
(c) Reinstall the FAN No. 1 relay and FAN No. 2 relay.

NG ► REPLACE ENGINE ROOM RELAY BLOCK

OK ► REPLACE ECM

14.	CHECK FUSE (ECU-IG NO. 1 FUSE VOLTAGE)
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*1



(a) Remove the ECU-IG No. 1 fuse from the instrument panel junction block.

c

(b) Turn the power switch on (IG).

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

Standard Voltage:

Tester Connection	Switch Condition	Specified Condition
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Tester Connection	Switch Condition	Specified Condition
1 (ECU-IG No. 1 fuse) - Body ground	Power switch on (IG)	11 to 14 V

Text in Illustration

*1	Driver Side Junction Block
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(d) Reinstall the ECU-IG No. 1 fuse.

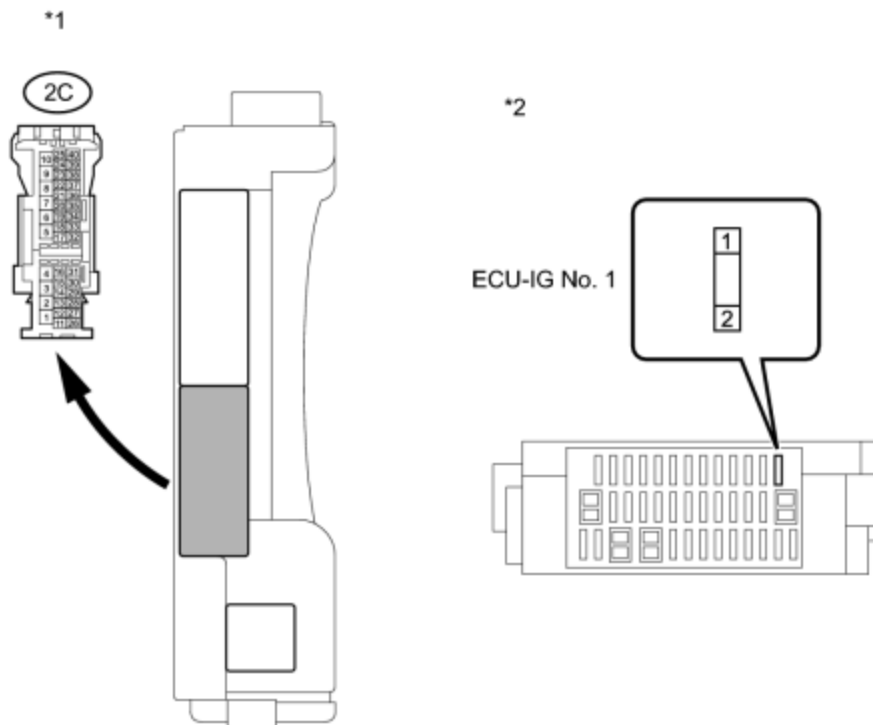
NG [▶ INSPECT DRIVER SIDE JUNCTION BLOCK ASSEMBLY \(IG1 NO. 1 RELAY\)](#)

OK



15.	INSPECT DRIVER SIDE JUNCTION BLOCK ASSEMBLY
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(a) Disconnect the driver side junction block assembly connector.



(b) Remove the ECU-IG No. 1 fuse from the driver side junction block assembly.

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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
2C-30 - 2 (ECU-IG No. 1)	Always	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Condition	Specified Condition
2C-30 or 2 (ECU-IG No. 1) - Body ground	Always	10 k Ω or higher

Text in Illustration

*1 Component without harness connected (Driver Side Junction Block Assembly)	*2 Driver Side Junction Block Assembly
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(d) Reconnect the ECU-IG No. 1 fuse.

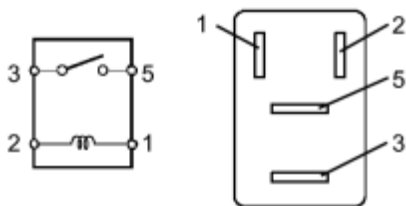
(e) Reconnect the Driver side junction block assembly connector.

NG  REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY

OK



16. INSPECT FAN NO. 1 RELAY



(a) Remove the FAN No. 1 relay from the engine room relay block.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
3 - 5	Battery voltage is not applied between terminals 1 and 2	10 k Ω or higher
	Battery voltage is applied between terminals 1 and 2	Below 1 Ω

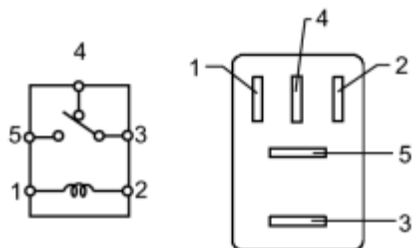
(c) Reinstall the FAN No. 1 relay.

NG  REPLACE FAN NO. 1 RELAY

OK



17. INSPECT FAN NO. 2 RELAY



(a) Remove the FAN No. 2 relay from the engine room relay block.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
3 - 4	Battery voltage is not applied between terminals 1 and 2	Below 1 Ω
	Battery voltage is applied between terminals 1 and 2	10 kΩ or higher
3 - 5	Battery voltage is not applied between terminals 1 and 2	10 kΩ or higher
	Battery voltage is applied between terminals 1 and 2	Below 1 Ω

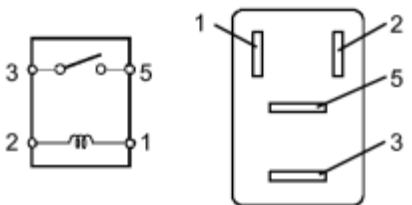
(c) Reinstall the FAN No. 2 relay.

NG REPLACE FAN NO. 2 RELAY

OK



18. INSPECT FAN NO. 3 RELAY



(a) Remove the FAN No. 3 relay from the engine room relay block.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
3 - 5	Battery voltage is not applied between terminals 1 and 2	10 k Ω or higher
	Battery voltage is applied between terminals 1 and 2	Below 1 Ω

(c) Reinstall the FAN No. 3 relay.

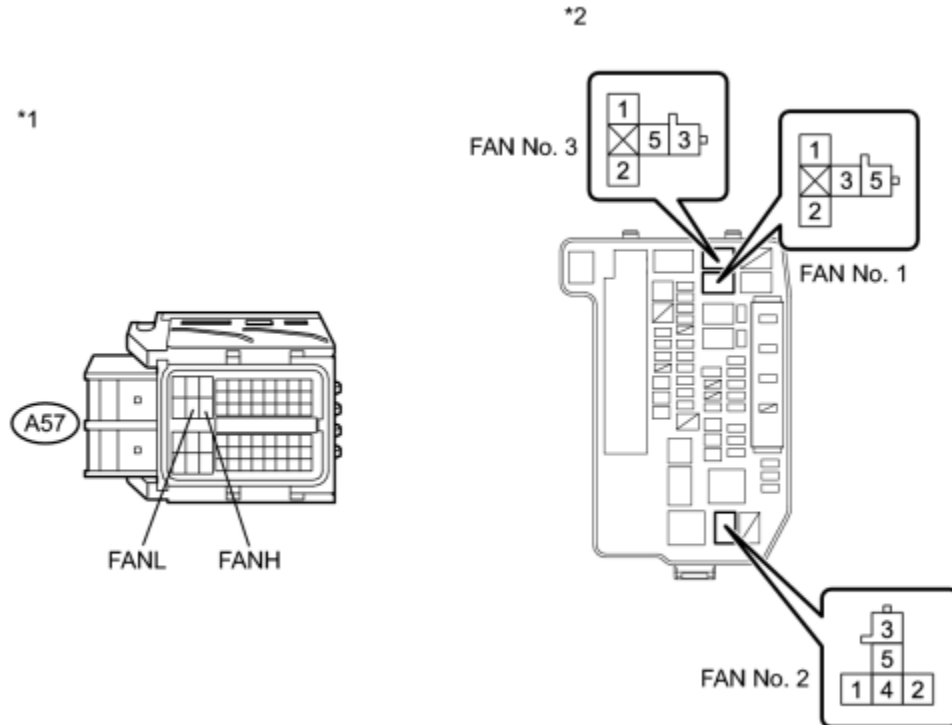
NG  REPLACE FAN NO. 3 RELAY

OK



19.	CHECK HARNESS AND CONNECTOR (ENGINE ROOM RELAY BLOCK - ECM)
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(a) Remove the FAN No. 1 relay, FAN No. 2 relay and FAN No. 3 relay from the engine room relay block.



(b) Disconnect the ECM connector.

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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
2 (FAN No. 1 relay) - A57-22 (FANH)	Always	Below 1 Ω

Tester Connection	Condition	Specified Condition
2 (FAN No. 2 relay) - A57-22 (FANH)	Always	Below 1 Ω
2 (FAN No. 3 relay) - A57-21 (FANL)	Always	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Condition	Specified Condition
2 (FAN No. 1 relay) or A57-22 (FANH) - Body ground	Always	10 kΩ or higher
2 (FAN No. 2 relay) or A57-22 (FANH) - Body ground	Always	10 kΩ or higher
2 (FAN No. 3 relay) or A57-21 (FANL) - Body ground	Always	10 kΩ or higher

Text in Illustration

*1	Front view of wire harness connector (to ECM)
*2	Engine Room Relay Block

(d) Reinstall the FAN No. 1 relay, FAN No. 2 relay and FAN No. 3 relay.

(e) Reconnect the ECM connector.

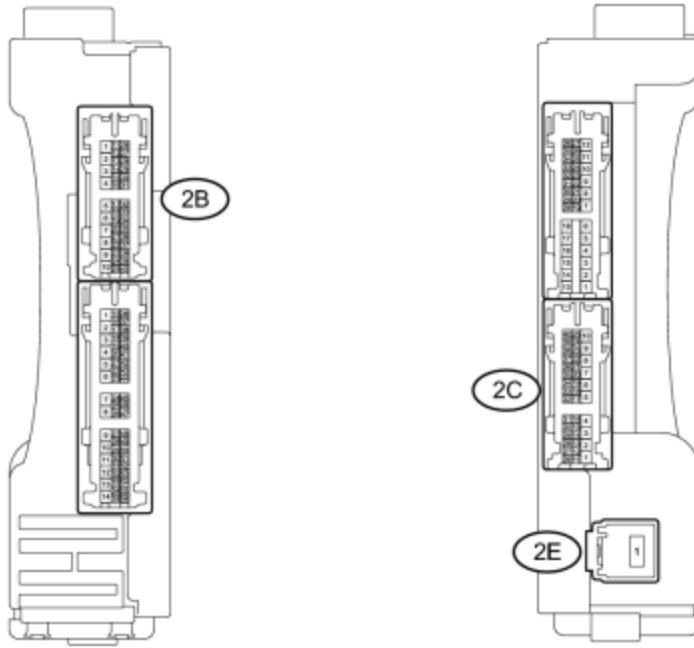
NG  REPAIR OR REPLACE HARNESS OR CONNECTOR (ENGINE ROOM RELAY BLOCK - ECM)

OK  **REPAIR OR REPLACE HARNESS OR CONNECTOR (ECU-IG NO. 1 FUSE - ENGINE ROOM RELAY BLOCK)**

20.	INSPECT DRIVER SIDE JUNCTION BLOCK ASSEMBLY (IG1 NO. 1 RELAY)
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(a) Disconnect the driver side junction block assembly connector.

*1



c

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
2E-1 - 2C-30	Battery voltage is not applied between terminals 2B-25 - 2B-6	10 kΩ or higher
	Battery voltage is applied between terminals 2B-25 - 2B-6	Below 1 Ω

Text in Illustration

*1	Component without harness connected (to Driver Side Junction Block Assembly)
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(c) Reconnect the driver side junction block assembly connector.

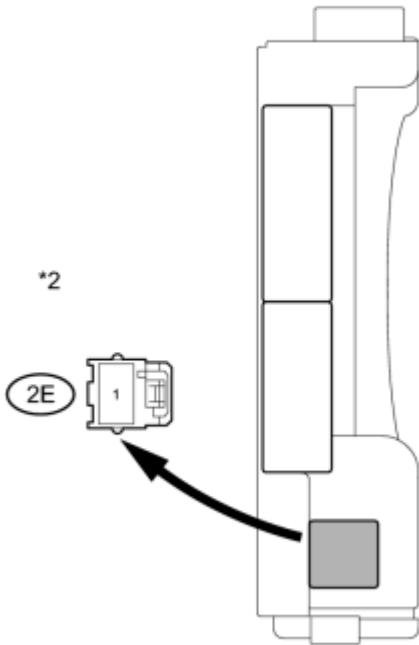
NG REPLACE DRIVER SIDE JUNCTION BLOCK ASSEMBLY (IG1 NO. 1 RELAY)

OK



21.	INSPECT DRIVER SIDE JUNCTION BLOCK ASSEMBLY (IG1 NO. 1 RELAY VOLTAGE)
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*1



(a) Disconnect the driver side junction block assembly connector.

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

Standard Voltage:

Tester Connection	Condition	Specified Condition
2E-1 - Body ground	Always	11 to 14 V

Text in Illustration

*1	Driver Side Junction Block Assembly
*2	Front view of wire harness connector (to Driver Side Junction Block Assembly)

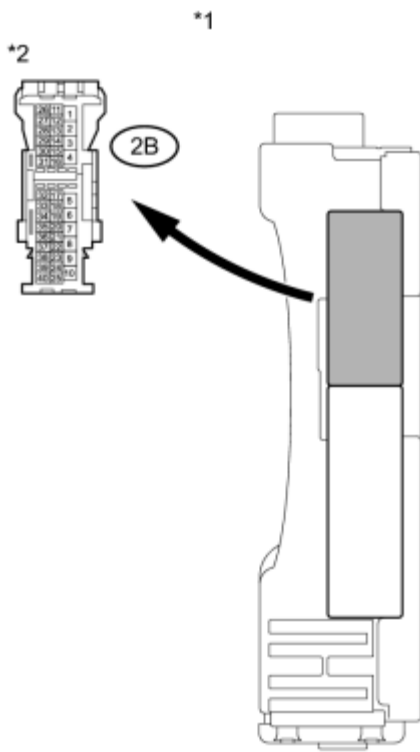
(c) Reconnect the driver side junction block assembly connector.

NG REPAIR OR REPLACE HARNESS OR CONNECTOR (BATTERY - DRIVER SIDE JUNCTION BLOCK ASSEMBLY)

OK



22.	CHECK HARNESS AND CONNECTOR (DRIVER SIDE JUNCTION BLOCK ASSEMBLY - BODY GROUND)
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(a) Disconnect the driver side junction block assembly connector.

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

Standard Resistance:

Tester Connection	Condition	Specified Condition
2B-6 - Body ground	Always	Below 1 Ω

Text in Illustration

*1	Driver Side Junction Block Assembly
*2	Front view of wire harness connector (to Driver Side Junction Block Assembly)

(c) Reconnect the driver side junction block assembly connector.

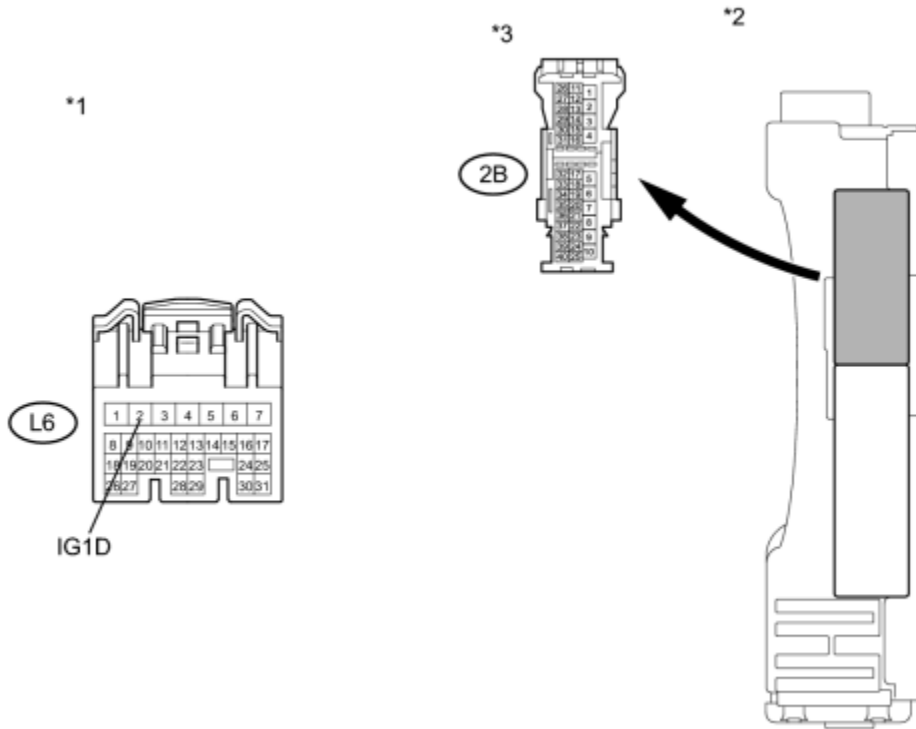
NG REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 NO. 1 RELAY - BODY GROUND)

OK



23.	CHECK HARNESS AND CONNECTOR (IG1 NO. 1 RELAY - POWER MANAGEMENT CONTROL ECU)
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(a) Disconnect the driver side junction block assembly connector.



(b) Disconnect the power management control ECU connector.

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

Standard Resistance (Check for Open):

Tester Connection	Condition	Specified Condition
L6-2 (IG1D) - 2B-25	Always	Below 1 Ω

Standard Resistance (Check for Short):

Tester Connection	Condition	Specified Condition
L6-2 (IG1D) or 2B-25 - Body ground	Always	10 k Ω or higher

Text in Illustration

*1	Front view of wire harness connector (to Power Management Control ECU)	*2	Driver Side Junction Block Assembly
*3	Front view of wire harness connector (to Driver Side Junction Block Assembly)	-	-

(d) Reconnect the driver side junction block assembly connector.

(e) Reconnect the power management control ECU connector.

NG ► REPAIR OR REPLACE HARNESS OR CONNECTOR (IG1 NO. 1 RELAY - POWER MANAGEMENT CONTROL ECU)

OK ► CHECK SMART KEY SYSTEM