

HYBRID CONTROL SYSTEM, Diagnostic DTC:P314A-828

DTC Code	DTC Name
P314A-828	Inverter Coolant Pump Speed Signal

DESCRIPTION

Refer to the description for DTC P0C73-776 [Click here](#).

The inverter water pump assembly sends the water pump speed (measured value) signal to the power management control ECU. If the water pump speed (measured value) signal is not sent to the power management control ECU when the power switch is on (READY), this DTC is stored.

DTC No.	INF Code	DTC Detection Condition	Trouble Area
P314A	828	<p>When either of the following conditions is met:</p> <ul style="list-style-type: none"> A malfunction in the power source circuit or water pump speed signal line of the inverter water pump assembly is detected. A malfunction in the power source circuit of the inverter water pump assembly or power management control ECU is detected. (1 trip detection logic) 	<ul style="list-style-type: none"> Wire harness or connector Power management control ECU Inverter water pump assembly IGCT No. 3 fuse IGCT relay

Related Data List

DTC No.	INF Code	Data List Item
P314A	828	<ul style="list-style-type: none"> Inverter W/P Revolution*1 W/P Run Control Duty*1 Ready Signal

*1: This Data List item is related to the inverter water pump assembly.

Related Active Test

DTC No.	INF Code	Active Test
P314A	828	Activate the Water Pump*2

*2: This is an Active Test of the inverter water pump assembly.

WIRING DIAGRAM

Refer to the wiring diagram for DTC P0C73-776 [Click here](#).

CAUTION / NOTICE / HINT

Tech Tips

After the repair, clear the DTCs and perform the following procedure to check that DTCs are not output.

- Turn the power switch on (READY) and wait for 2 minutes or more.

PROCEDURE

1. CLEAR DTC

- Connect the GTS to the DLC3.
- Turn the power switch on (IG).
- Enter the following menus: Powertrain / Hybrid Control / Trouble Codes.
- Clear DTCs and freeze frame data.
- Turn the power switch off.

NEXT

2. PERFORM ACTIVE TEST USING GTS (ACTIVATE THE WATER PUMP)

Note

Be sure to perform the inspection with the auxiliary battery voltage at 11 V or more.

Tech Tips

When the auxiliary battery voltage is low, the inverter water pump assembly may not operate.

- Connect the GTS to the DLC3.
- Turn the power switch on (IG).
- Enter the following menus: Powertrain / Hybrid Control / Active Test / Activate the Water Pump.
- Perform the Activate the Water Pump Active Test.
- Touch the inverter water pump assembly and check that it is operating (vibrating).

OK

The inverter water pump is operating (vibrating).

f. Turn the power switch off.

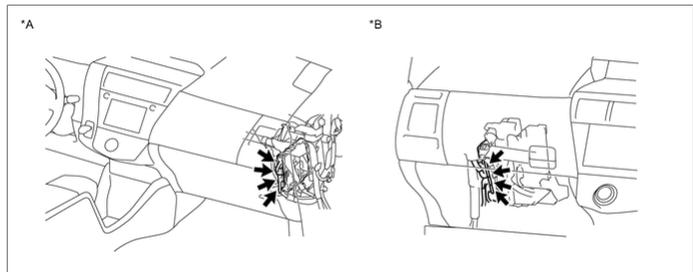
NG

OK

CHECK CONNECTOR CONNECTION CONDITION (INVERTER WATER PUMP ASSEMBLY CONNECTOR) [Click here](#)

3. CHECK CONNECTOR CONNECTION CONDITION (POWER MANAGEMENT CONTROL ECU CONNECTOR)

a. Check the connector connections and contact pressure of the relevant terminals for the power management control ECU connectors [Click here](#).



Text in Illustration

*A	for LHD	*B	for RHD
----	---------	----	---------

OK

The connectors are connected securely and there are no contact pressure problems.

NG

OK

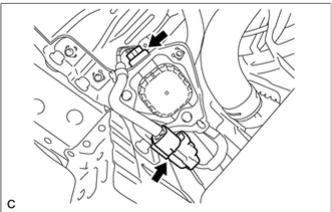
CONNECT SECURELY

4. CHECK CONNECTOR CONNECTION CONDITION (INVERTER WATER PUMP ASSEMBLY CONNECTOR)

a. Check the connector connections and contact pressure of the relevant terminals for the inverter water pump assembly connector [Click here](#).

OK

The connector is connected securely and there are no contact pressure problems.



NG

OK

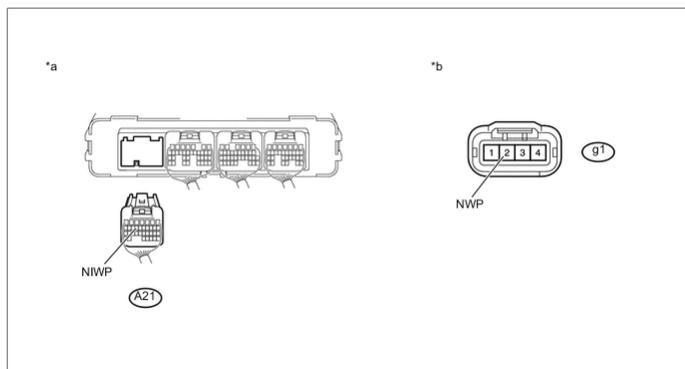
CONNECT SECURELY

5. CHECK HARNESS AND CONNECTOR (POWER MANAGEMENT CONTROL ECU - INVERTER WATER PUMP ASSEMBLY)

a. Disconnect the A21 power management control ECU connector.

b. Disconnect the g1 inverter water pump assembly connector.

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



Text in Illustration

*a	Rear view of wire harness connector (to Power Management Control ECU)	*b	Front view of wire harness connector (to Inverter Water Pump Assembly)
----	---	----	--

Standard Resistance

Tester Connection	Condition	Specified Condition
g1-2 (NWP) - A21-14 (NIWP)	Power switch off	Below 1 Ω
g1-2 (NWP) or A21-14 (NIWP) -Body ground and other terminals	Power switch off	10 kΩ or higher

- d. Reconnect the A21 power management control ECU connector.
- e. Reconnect the g1 inverter water pump assembly connector.

NG → REPAIR OR REPLACE HARNESS OR CONNECTOR

OK

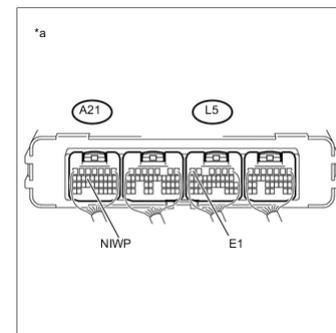
6. CHECK POWER MANAGEMENT CONTROL ECU

- a. Disconnect the g1 inverter water pump assembly connector.
- b. Turn the power switch on (IG).
- c. Measure the voltage according to the value(s) in the table below.

Standard Voltage

Tester Connection	Condition	Specified Condition
A21-14 (NIWP) - L5-6 (E1)	Power switch on (IG)	11 to 14 V

- d. Turn the power switch off.
- e. Reconnect the g1 inverter water pump assembly connector.



Text in Illustration

*a	Component with harness connected (Power Management Control ECU)
----	---

NG → REPLACE POWER MANAGEMENT CONTROL ECU [Click here](#)

OK

7. CLEAR DTC

- a. Connect the GTS to the DLC3.
- b. Turn the power switch on (IG).
- c. Enter the following menus: Powertrain / Hybrid Control / Trouble Codes.
- d. Clear DTCs and freeze frame data.
- e. Turn the power switch off.

NEXT

8. PERFORM ACTIVE TEST USING GTS (ACTIVATE THE WATER PUMP)

Note

Be sure to perform the inspection with the auxiliary battery voltage at 11 V or more.

Tech Tips

When the auxiliary battery voltage is low, the inverter water pump assembly may not operate.

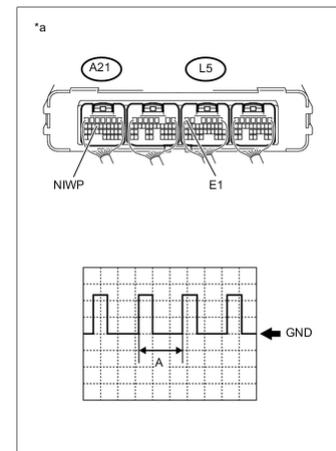
- a. Connect the GTS to the DLC3.
- b. Turn the power switch on (IG).
- c. Enter the following menus: Powertrain / Hybrid Control / Active Test / Activate the Water Pump.
- d. Perform the "Activate the Water Pump" Active Test.
- e. Connect an oscilloscope between the power management control ECU terminals specified in the table below, and measure the waveform.

Item	Content
Terminal	A21-14 (NIWP) - L5-6 (E1)
Equipment Setting	5 V/DIV., 100 ms./DIV.
Condition	Power switch on (IG), during Active Test

OK

The duration of wavelength A is 300 msec or less.

- f. Turn the power switch off.



Text in Illustration

*a Component with harness connected (Power Management Control ECU)

OK → REPLACE POWER MANAGEMENT CONTROL ECU [Click here](#)

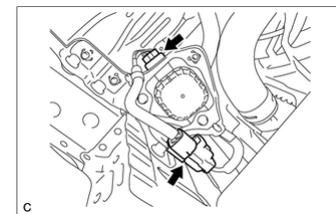
NG → REPLACE INVERTER WATER PUMP ASSEMBLY [Click here](#)

9. CHECK CONNECTOR CONNECTION CONDITION (INVERTER WATER PUMP ASSEMBLY CONNECTOR)

- a. Check the connector connections and contact pressure of the relevant terminals for the inverter water pump assembly connector [Click here](#).

OK

The connector is connected securely and there are no contact pressure problems.

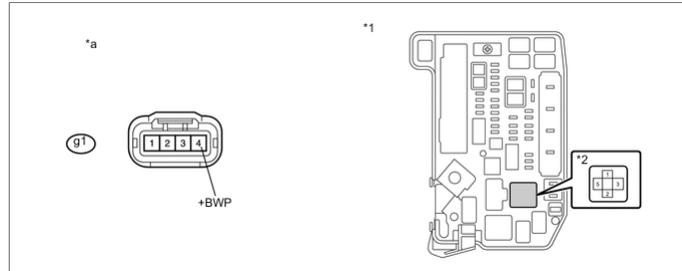


NG → CHECK FUSE (IGCT NO. 3) [Click here](#)

OK

10. CHECK HARNESS AND CONNECTOR (INVERTER WATER PUMP ASSEMBLY - IGCT RELAY)

- a. Remove the IGCT relay from the engine room relay block and junction block assembly.
- b. Disconnect connector g1 from the inverter water pump assembly.
- c. While slightly shaking the wire harness, connector and engine room relay block and junction block assembly, measure the resistance according to the value(s) in the table below.



Text in Illustration

*1	Engine Room Relay Block and Junction Block Assembly	*2	IGCT Relay
*a	Front view of wire harness connector (to Inverter Water Pump Assembly)	-	-

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
5 (IGCT relay) - g1-4 (+BWP)	Power switch off	Below 1 Ω

Tech Tips

- Connectors
Slightly shake the connector vertically and horizontally.
- Wire Harness
Slightly shake the wire harness vertically and horizontally.
The connector joint and fulcrum of the vibration are the major areas that should be checked thoroughly.
- Engine Room Relay Block and Junction Block Assembly
Apply slight vibration with a finger to the engine room relay block and junction block assembly and check whether a malfunction occurs.

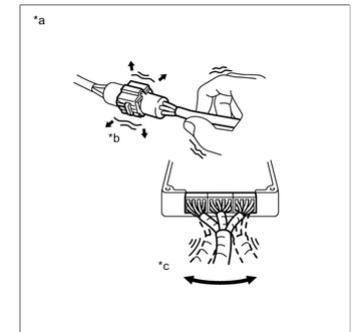
Text in Illustration

*a	Example
*b	Shake Slightly
*c	Vibrate Slightly

Note

Do not apply excessive force when using the probes of the tester to perform the inspection. If excessive force is used, the terminals will be damaged.

- d. Install the IGCT relay.
- e. Connect the inverter water pump assembly connector.



NG

CHECK INSTALLATION CONDITION (IGCT NO. 3 FUSE) [Click here](#)

OK

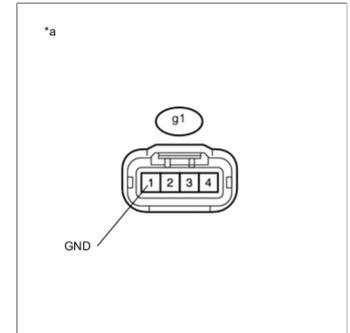
11. CHECK HARNESS AND CONNECTOR (INVERTER WATER PUMP ASSEMBLY - BODY GROUND)

- a. Disconnect connector g1 from the inverter water pump assembly.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
g1-1 (GND) - Body ground	Power switch off	Below 1 Ω

c. Connect the inverter water pump assembly connector.



Text in Illustration
*a Front view of wire harness connector (to Inverter Water Pump Assembly)

OK	REPLACE INVERTER WATER PUMP ASSEMBLY Click here
NG	REPAIR OR REPLACE HARNESS OR CONNECTOR

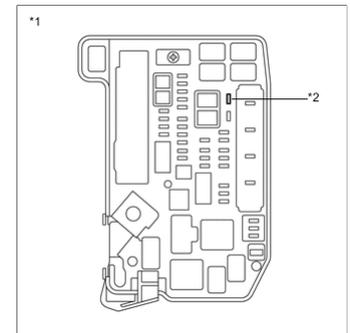
12. CHECK FUSE (IGCT NO. 3)

- a. Remove the IGCT No. 3 fuse from the engine room relay block and junction block assembly.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
IGCT No. 3 fuse	Always	Below 1Ω

c. Install the IGCT No. 3 fuse.



Text in Illustration
*1 Engine Room Relay Block and Junction Block Assembly
*2 IGCT No. 3 Fuse

OK	CONNECT SECURELY (INVERTER WATER PUMP ASSEMBLY CONNECTOR)
NG	CONNECT SECURELY Click here

13. CHECK INSTALLATION CONDITION (IGCT NO. 3 FUSE)

a. Check installation condition of the IGCT No. 3 fuse.

OK

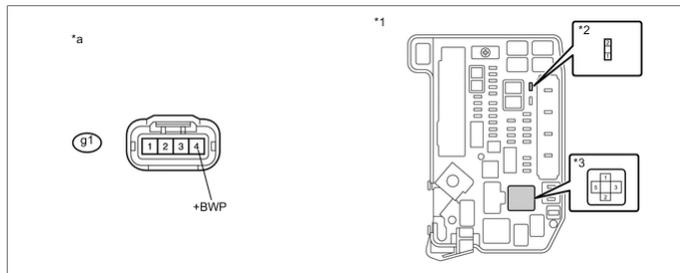
IGCT No. 3 fuse is installed correctly.

NG	CHECK FUSE HOLDER TERMINAL (IGCT NO. 3 FUSE) Click here
OK	

14. CHECK HARNESS AND CONNECTOR (INVERTER WATER PUMP ASSEMBLY CIRCUIT)

a. Remove the IGCT No. 3 fuse from the engine room relay block and junction block assembly.

- b. Remove the IGCT relay from the engine room relay block and junction block assembly.
- c. Disconnect connector g1 from the inverter water pump assembly.
- d. Measure the resistance according to the value(s) in the table below.



Text in Illustration

*1	Engine Room Relay Block and Junction Block Assembly	*2	IGCT No. 3 Fuse
*3	IGCT Relay	-	-
*a	Front view of wire harness connector (to Inverter Water Pump Assembly)	-	-

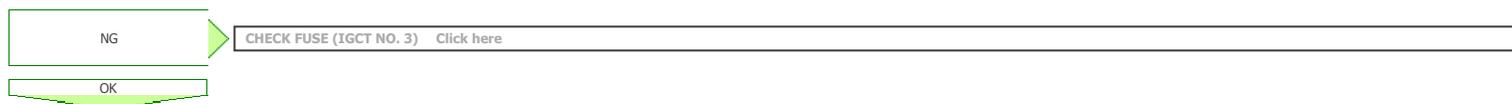
Standard Resistance

Tester Connection	Switch Condition	Specified Condition
2 (IGCT No. 3 fuse) - g1-4 (+BWP)	Power switch off	Below 1 Ω
1 (IGCT No. 3 fuse) - 5 (IGCT relay)	Power switch off	Below 1 Ω
2 (IGCT No. 3 fuse) or g1-4 (+BWP) - Body ground and other terminals	Power switch off	10 kΩ or higher

Note

Do not apply excessive force when using the probes of the tester to perform the inspection. If excessive force is used, the terminals will be damaged.

- e. Install the IGCT No. 3 fuse.
- f. Install the IGCT relay.
- g. Connect the inverter water pump assembly connector.



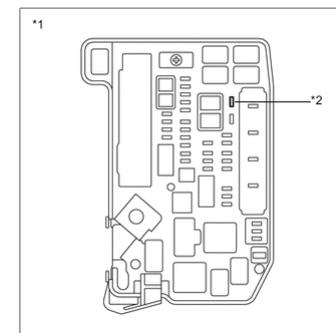
15. CHECK FUSE (IGCT NO. 3)

- a. Remove the IGCT No. 3 fuse from the engine room relay block and junction block assembly.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
IGCT No. 3 fuse	Always	Below 1Ω

- c. Install the IGCT No. 3 fuse.



Text in Illustration

*1	Engine Room Relay Block and Junction Block Assembly
*2	IGCT No. 3 Fuse

- OK → REPAIR OR REPLACE HARNESS OR CONNECTOR (IGCT NO. 3 FUSE HOLDER TERMINALS)
- NG → CHECK HARNESS AND CONNECTOR (INVERTER WATER PUMP ASSEMBLY - BODY GROUND) [Click here](#)

16. CHECK FUSE HOLDER TERMINAL (IGCT NO. 3 FUSE)

a. Check the terminals of the IGCT No. 3 fuse holder.

OK

The terminals of the IGCT No. 3 fuse holder are not bent, loose or corroded.

- NG → CHECK FUSE (IGCT NO. 3) [Click here](#)
- OK

17. CHECK FUSE (IGCT NO. 3)

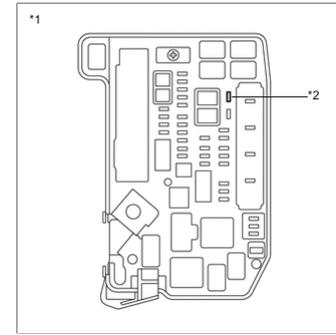
a. Remove the IGCT No. 3 fuse from the engine room relay block and junction block assembly.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
IGCT No. 3 fuse	Always	Below 1Ω

c. Install the IGCT No. 3 fuse.



Text in Illustration

- *1 Engine Room Relay Block and Junction Block Assembly
- *2 IGCT No. 3 Fuse

- OK → CONNECT SECURELY (IGCT NO. 3 FUSE)
- NG → REPLACE FUSE (IGCT NO. 3)

18. CHECK FUSE (IGCT NO. 3)

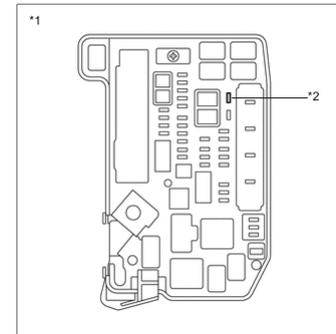
a. Remove the IGCT No. 3 fuse from the engine room relay block and junction block assembly.

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

Standard Resistance

Tester Connection	Condition	Specified Condition
IGCT No. 3 fuse	Always	Below 1Ω

c. Install the IGCT No. 3 fuse.



Text in Illustration

- *1 Engine Room Relay Block and Junction Block Assembly

*2 IGCT No. 3 Fuse

- OK REPAIR OR REPLACE HARNESS OR CONNECTOR
- NG REPAIR OR REPLACE HARNESS OR CONNECTOR [Click here](#)

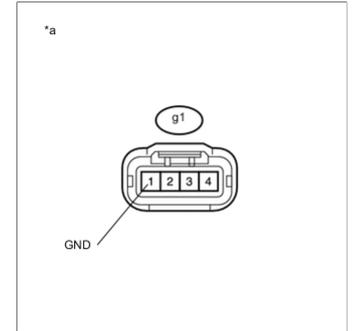
19. CHECK HARNESS AND CONNECTOR (INVERTER WATER PUMP ASSEMBLY - BODY GROUND)

- a. Disconnect connector g1 from the inverter water pump assembly.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Switch Condition	Specified Condition
g1-1 (GND) - Body ground	Power switch off	Below 1 Ω

- c. Connect the inverter water pump assembly connector.



Text in Illustration

*a Front view of wire harness connector (to Inverter Water Pump Assembly)

- NG REPAIR OR REPLACE HARNESS OR CONNECTOR [Click here](#)
- OK

20. CHECK FUSE HOLDER TERMINAL (IGCT NO. 3 FUSE)

- a. Check the terminals of the IGCT No. 3 fuse holder.

OK

The terminals of the IGCT No. 3 fuse holder are not bent, loose or corroded.

- NG REPAIR OR REPLACE HARNESS OR CONNECTOR (IGCT NO. 3 FUSE HOLDER TERMINALS) [Click here](#)
- OK

21. REPLACE INVERTER WATER PUMP ASSEMBLY

[Click here](#)

- NEXT REPLACE FUSE (IGCT NO. 3)

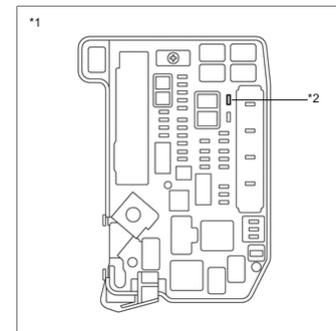
22. CHECK FUSE (IGCT NO. 3)

- a. Remove the IGCT No. 3 fuse from the engine room relay block and junction block assembly.
- b. Measure the resistance according to the value(s) in the table below.

Standard Resistance

Tester Connection	Condition	Specified Condition
IGCT No. 3 fuse	Always	Below 1Ω

- c. Install the IGCT No. 3 fuse.



Text in Illustration

*1	Engine Room Relay Block and Junction Block Assembly
*2	IGCT No. 3 Fuse

- OK → REPAIR OR REPLACE HARNESS OR CONNECTOR (IGCT NO. 3 FUSE HOLDER TERMINALS)
- NG → REPAIR OR REPLACE HARNESS OR CONNECTOR (IGCT NO. 3 FUSE HOLDER TERMINALS) [Click here](#)

23. CONNECT SECURELY

a. Connect the inverter water pump assembly connector securely.

- NEXT → REPLACE FUSE (IGCT NO. 3)

24. REPAIR OR REPLACE HARNESS OR CONNECTOR

- NEXT → REPLACE FUSE (IGCT NO. 3)

25. REPAIR OR REPLACE HARNESS OR CONNECTOR (IGCT NO. 3 FUSE HOLDER TERMINALS)

NEXT

REPLACE FUSE (IGCT NO. 3)