DTC	P0AA6-611	Hybrid Battery Voltage System Isolation Fault

DESCRIPTION

The DTC is stored if there is insulation trouble with the high-voltage circuits in the air conditioning system. Possible causes are poor insulation in the compressor with motor assembly, or mixing of any oil other than ND-OIL 11 in the refrigerant cycle.

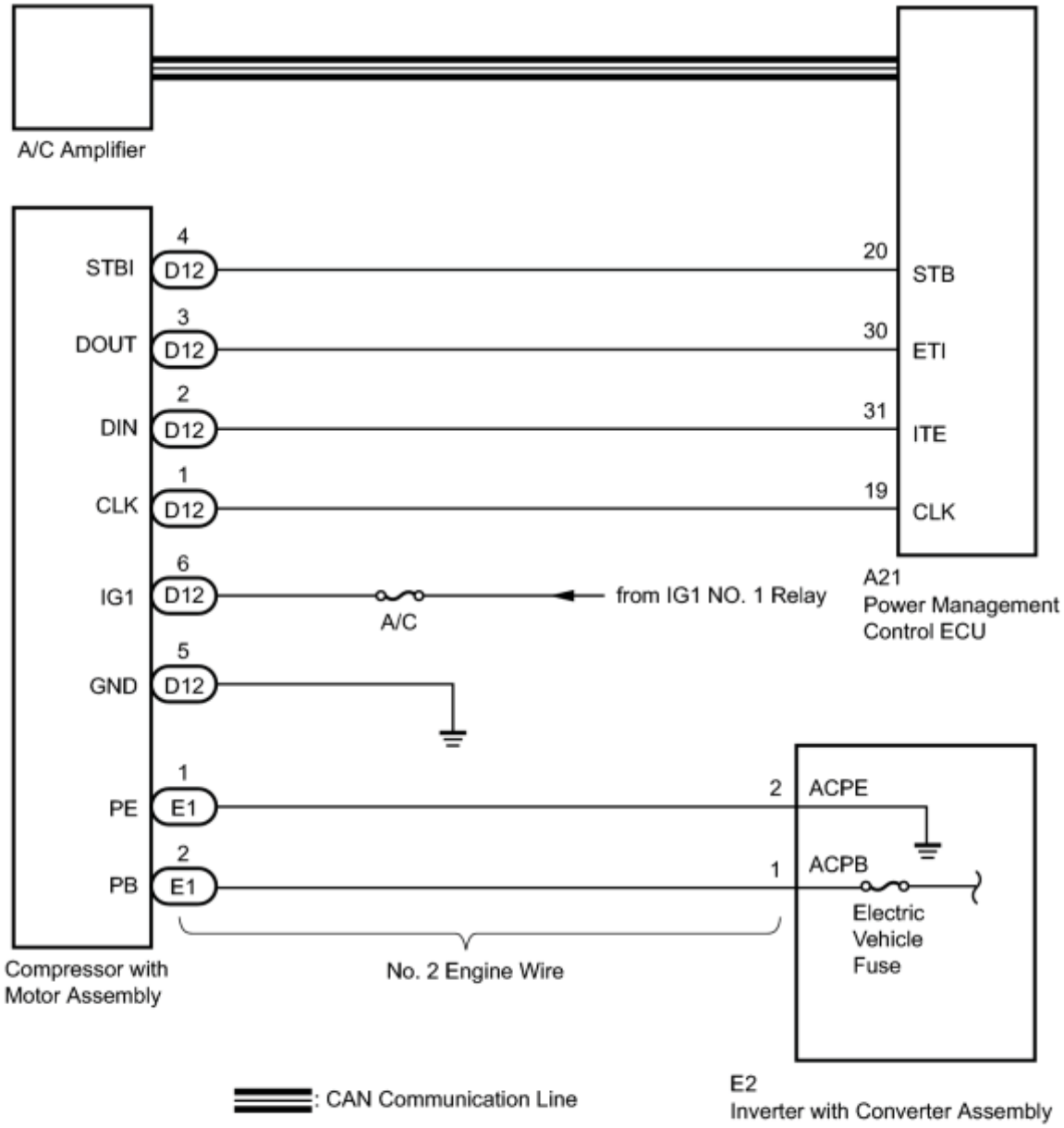
The motor driven with high-voltage is built into the electrical compressor and is cooled directly with refrigerant. Compressor oil (ND-OIL 11) with high insulation performance is used because a leakage of electrical power may occur if regular compressor oil (ND-OIL 8) is used.

CAUTION:

- Wear insulated gloves and pull out the service plug grip before inspection as procedures may require disconnecting high-voltage connectors.
- Be sure to carry the removed service plug grip because other workers may install it by mistake.
- Do not touch the high-voltage connectors or terminals for 10 minutes after the service plug grip is removed.

DTC No.	DTC Detection Condition	Trouble Area
P0AA6-611	High voltage system insulation malfunction	• Compressor oil • Refrigerant pipe line • Compressor with motor assembly • CAN communication system

WIRING DIAGRAM



INSPECTION PROCEDURE

CAUTION:

- Wear insulated gloves and pull out the service plug grip before inspection as procedures may require disconnecting high-voltage connectors.
- Be sure to carry the removed service plug grip because other workers may install it by mistake.
- Do not touch the high-voltage connectors or terminals for 10 minutes after the service plug grip is removed.

NOTICE:

- Electrical insulation performance may decrease significantly if even a small amount of oil other than ND-OIL 11 is used (or enters) in the refrigerant cycle, causing the DTC to be output.
- If other oil is accidentally used and a DTC is output, collect the oil in the refrigerant cycle into the compressor and replace it with ND-OIL 11 to increase the ND-OIL 11 ratio amount.
- Replace the main components (evaporator, condenser, and compressor) if a large amount of oil other than ND-OIL 11 enters the system. Failing to do so may cause electrical insulation performance to remain low, causing the DTC to be output.
- The hybrid control system and air conditioning system output DTCs separately. Inspect DTCs following the flow chart for the hybrid control system first if any DTCs from those systems are output simultaneously.

HINT:

If it can be confirmed that any compressor oil other than ND-OIL 11 has been used in the vehicle, replace the air conditioning cycle.

PROCEDURE

1.	CHECK CAN COMMUNICATION SYSTEM

(a) Using the Techstream to check if the CAN communication system is functioning normally.

Result:

Result	Proceed to
CAN DTC is not output	A
CAN DTC is output	B

B GO TO CAN COMMUNICATION SYSTEM

A

2.	INSPECT COMPRESSOR WITH MOTOR ASSEMBLY

CAUTION:

Because the compressor has a high-voltage circuit, wear insulated gloves and pull out the service plug grip to cut off the high-voltage circuit before inspection.

(a) Clear the DTCs INFO.

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

(c) Prepare the vehicle according to the table below for 3 minutes.

Item	Condition
Blower speed	HI
Temperature setting	MAX COLD

Item	Condition
A/C	ON

(d) Turn the power switch off.

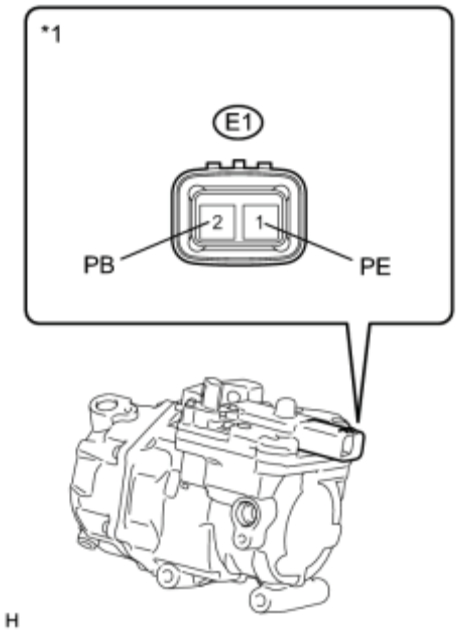
(e) Remove the service plug grip.

CAUTION:

Do not touch the high-voltage connectors or terminals for 10 minutes after the service plug grip is removed.

NOTICE:

Do not start the engine with the service plug grip removed because it may cause a malfunction.



(f) Disconnect the connector from the compressor with motor assembly.

(g) Using a megohmmeter, measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
E1-1 (PE) - Body ground	Always	2 MΩ or higher
E1-2 (PB) - Body ground	Always	2 MΩ or higher

Text in Illustration

*1	Component without harness connected (Compressor with Motor Assembly)

NG REPLACE COMPRESSOR WITH MOTOR ASSEMBLY

OK

3.	INSPECT AIR CONDITIONING CYCLE

CAUTION:

Because the compressor has a high-voltage circuit, wear insulated gloves and pull out the service plug grip to cut off the high-voltage circuit before inspection.

(a) Reconnect the connector to the compressor with motor assembly.

(b) Install the service plug grip.

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

(d) Set the A/C setting temperature to 25°C (77°F) and the blower switch LO and then operate the compressor for 10 minutes to circulate the refrigerant cycle with refrigerant and collect as much compressor oil as possible.

(e) Turn the power switch off.

(f) Using a spot cooler or other tools, cool down the compressor with motor assembly for 30 minutes, or leave the vehicle overnight before inspection.

NOTICE:

Do not operate the compressor before inspection.

(g) Remove the service plug grip.

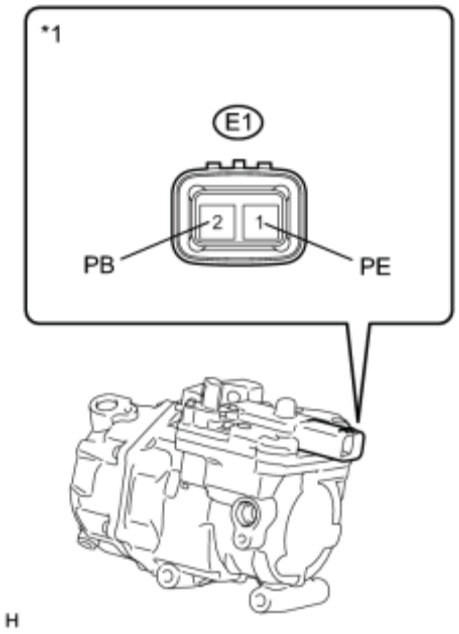
CAUTION:

Do not touch the high-voltage connectors or terminals for 10 minutes after the service plug grip is removed.

NOTICE:

Do not start the engine with the service plug grip removed because it may cause a malfunction.

(h) Disconnect the connector from the compressor with motor assembly.



(i) Using a megohmmeter, measure the resistance according to the value(s) in the table below.

Standard Resistance:

Tester Connection	Condition	Specified Condition
E1-1 (PE) - Body ground	Always	3 MΩ or higher
E1-2 (PB) - Body ground	Always	3 MΩ or higher

NOTICE:

If the results are out of the specified range, replace the compressor without operating.

Text in Illustration

*1	Component without harness connected (Compressor with Motor Assembly)

NG ▶ REPLACE AIR CONDITIONING CYCLE

OK ▶ **REPLACE COMPRESSOR WITH MOTOR ASSEMBLY**