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2009 NISSAN Frontier OEM Service and Repair Workshop Manual

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1. PERFORM DTC CONFIRMATION PROCEDURE

 With CONSULT

1. Power switch ON and wait at least 2 seconds.
2. Check "Self diagnosis Results" of "HIGH VOLTAGE BATTERY" and "HIGH VOLTAGE BATTERY 2".

Is P1B6F-F2 detected?

YES>>

Refer to [DTC Diagnosis Procedure](#).

NO-1>>

To check malfunction symptom before repair: Refer to [Intermittent Incident](#).

NO-2>>

Confirmation after repair: INSPECTION END

Sample

1. CHECK CELL VOLTAGE DATA MONITOR

 With CONSULT

1. Power switch ON.
2. Select "Data Monitor" of "HIGH VOLTAGE BATTERY".
3. Select "Cell condition 01-96".
4. Check that each cell is abnormal.

Is any cell abnormal?

YES>>

[GO TO 2.](#)

NO>>

Perform intermittent incident. Refer to [Inspection](#).

2. CHECK CELL VOLTAGE DETECTION CIRCUIT

Check cell voltage circuit (harness connector between cell controller and module) corresponding to that cell is abnormal. Refer to [Diagnosis Procedure](#).



NOTE:

For comparison of cell, module, and cell controller, Refer to [Component Description](#).

Is the inspection result normal?

YES>>

[GO TO 3.](#)

NO>>

Repair or replace malfunctioning parts.

3. CHECK CELL VOLTAGE

Check the voltage of the cell corresponding to abnormal cell number. Refer to [Component Description](#).



NOTE:

For comparison of cell, module, and cell controller, Refer to [Component Description](#).

Cell voltage is 0.5 V or more>>

Replace cell controller corresponding to that cell is abnormal. Refer to [Removal & Installation](#).

Cell voltage is 0.5 V or less>>

Replace corresponding module. Refer to [Disassembly & Assembly](#).

DTC DETECTION LOGIC

DTC		CONSULT screen terms	DTC detection condition	
P1BA2	49	Battery voltage isolation circuit	Diagnosis condition	<ul style="list-style-type: none"> At the time of LBC activation At the time of LBC shut down
			Signal (terminal)	Insulation resistance
			Threshold	When malfunction of insulation resistance detection circuit is detected.
			Diagnosis delay time	20 seconds or less

POSSIBLE CAUSE

High voltage circuit insulation resistance loss

FAIL-SAFE

Pattern D: EV system warning lamp illuminate

Sample

1. PERFORM DTC CONFIRMATION PROCEDURE

 With CONSULT

1. Power switch ON and wait at least 2 seconds.
2. Check "Self diagnosis Results" of "HIGH VOLTAGE BATTERY" and "HIGH VOLTAGE BATTERY 2".

Is P1BA2-49 detected?

YES>>

Refer to [DTC Diagnosis Procedure](#).

NO-1>>

To check malfunction symptom before repair: Refer to [Intermittent Incident](#).

NO-2>>

Confirmation after repair: INSPECTION END

Sample

DANGER:

Since hybrid vehicles and electric vehicles contain a high voltage battery, there is the risk of electric shock, electric leakage, or similar accidents if the high voltage component and vehicle are handled incorrectly. Be sure to follow the correct work procedures when performing inspection and maintenance.

WARNING:

- Be sure to remove the service plug in order to disconnect the high voltage circuits before performing inspection or maintenance of high voltage system harnesses and parts.
- The removed service plug must always be carried in a pocket of the responsible worker or placed in the tool box during the procedure to prevent the plug from being connected by mistake.
- Be sure to wear insulating protective equipment consisting of glove, shoes, face shield and glasses before beginning work on the high voltage system.
- Never allow workers other than the responsible person to touch the vehicle containing high voltage parts. To keep others from touching the high voltage parts, these parts must be covered with an insulating sheet except when using them.
- Refer to [HIGH VOLTAGE PRECAUTIONS : Precautions](#).

CAUTION:

Never bring the vehicle into the READY status with the service plug removed unless otherwise instructed in the Service Manual. A malfunction may occur if this is not observed.

When you turned the power switch ON with the service plug removed, be sure to erase all the DTCs after trouble diagnosis.

1. CHECK EACH HIGH VOLTAGE PARTS VISUALLY

1. Power switch OFF.
2. Check visually each high voltage parts for damage.

Is the inspection result normal?

YES>>

[GO TO 2.](#)

NO>>

Repair or replace malfunctioning parts.

2. CHECK A/C REFRIGERANT GAS

Interview the customer, check maintenance history, and confirm possibility if there is something other than the specified gas for EV is mixed in the A/C. refrigerant gas.

**NOTE:**

If the A/C refrigerant gas is not specified for EV, insulation may decrease.

Is refrigerant gas abnormal?

YES>>

Replace A/C refrigerant gas and electric compressor oil. Refer to [Recycle Refrigerant](#) and [Charge Refrigerant](#).

NO>>

[GO TO 3.](#)

3. PRECONDITIONING

WARNING:

Follow the instructions below before starting the procedure.

1. Disconnect high voltage circuit. Refer to [HOW TO DISCONNECT HIGH VOLTAGE : Precautions](#).
2. Check voltage in high voltage circuit. Refer to [CHECK VOLTAGE IN HIGH VOLTAGE CIRCUIT : Precautions](#).

>>

[GO TO 4.](#)

4. CHECK HIGH VOLTAGE HARNESS INSULATION OF LI-ION BATTERY (QUICK CHARGE PORT)

WARNING:



Unlike the ordinary tester, the insulation resistance tester applies 500 V when measuring. If used incorrectly, there is the danger of electric shock. If used in the vehicle 12 V system, there is the danger of damage to electronic devices. Read the insulation resistance tester instruction manual carefully and be sure to work safely.

1. Disconnect Li-ion battery (quick charge port) high voltage harness connector (H104).
2. Check the insulation resistance of high voltage harness with an insulation resistance tester (Multitester), between Li-ion battery and ground.

CAUTION:

- Use 500 V range of insulation resistance tester to measure insulation resistance.
- If higher than 500V is applied to EV control system, the system may be damaged.
- Wait for 30 seconds until the value becomes stable.

+		-	Resistance
Li-ion battery (quick charge port)			
Connector	Terminal	Ground	5.6 MΩ or more
H104	42		
	43		

Is the inspection result normal?

YES>>

[GO TO 5.](#)

NO>>

Replace high voltage harness of Li-Ion battery (charge port). Refer to [CHARGE PORT : Removal & Installation](#).

5. CHECK INSULATION HIGH VOLTAGE HARNESS OF LI-ION BATTERY [INVERTER (FRONT)]

WARNING:



Unlike the ordinary tester, the insulation resistance tester applies 500 V when measuring. If used incorrectly, there is the danger of electric shock. If used in the vehicle 12 V system, there is the danger of damage to electronic devices. Read the insulation resistance tester instruction manual carefully and be sure to work safely.

1. Disconnect Li-ion battery (quick charge port) high voltage harness connector (H5).
2. Check the insulation resistance of high voltage harness with an insulation resistance tester (Multitester), between Li-ion battery and ground.

CAUTION:

- Use 500 V range of insulation resistance tester to measure insulation resistance.
- If higher than 500V is applied to EV control system, the system may be damaged.
- Wait for 30 seconds until the value becomes stable.

+		-	Resistance
Li-ion battery [Inverter (front)]			
Connector	Terminal	Ground	5.6 MΩ or more
H5	37		
	38		

Is the inspection result normal?

YES>>

[GO TO 6.](#)

NO>>

Replace high voltage harness of Li-ion battery [inverter (front)]. Refer to [INVERTER \(FRONT\): Removal & Installation](#).

6. CHECK INSULATION RESISTANCE OF ELECTRIC COMPRESSOR

Check insulation of electric compressor. Refer to [Insulation Resistance Check](#).

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 7.](#)

NO>>

Replace electric compressor. Refer to [Removal & Installation](#).

7. CHECK INSULATION RESISTANCE OF PTC HEATER

Check insulation resistance of PTC heater. Refer to [Insulation Resistance Check](#).

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 8.](#)

NO>>

Replace PTC heater. Refer to [Removal & Installation](#).

8. CHECK INSULATION RESISTANCE OF HIGH VOLTAGE JUNCTION BOX

Check insulation resistance of high voltage junction box. Refer to [Diagnosis Procedure](#).

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 9.](#)

NO>>

Replace high voltage junction box. Refer to [HIGH VOLTAGE JUNCTION BOX : Disassembly & Assembly](#).

9. CHECK INSULATION RESISTANCE OF DC/DC CONVERTER

Check insulation resistance of DC/DC converter. Refer to [Diagnosis Procedure](#).

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 10.](#)

NO>>

Replace DC/DC converter. Refer to [DC/DC CONVERTER : Disassembly & Assembly](#).

10. CHECK INSULATION RESISTANCE OF ON-BOARD CHARGER

Check insulation resistance of on-board charger. Refer to [Diagnosis Procedure](#).

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 11.](#)

NO>>

Replace on-board charger. Refer to [ON-BOARD CHARGER : Disassembly & Assembly.](#)

11. CHECK INSULATION RESISTANCE OF INVERTER (FRONT)

Check insulation resistance of inverter (front). Refer to [Component Inspection.](#)

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 12.](#)

NO>>

Replace inverter (front). Refer to [INVERTER \(FRONT\) : Removal & Installation.](#)

12. CHECK INSULATION RESISTANCE OF TRACTION MOTOR.

Check insulation resistance of traction motor. Refer to [Component Inspection.](#)

CAUTION:

- Since testers are polarized, check the polarity of the tester and connect it in the forward direction to the circuit.
- If the inspection results show no continuity, check the parts for proper installation.

Is the inspection result normal?

YES>>

[GO TO 13.](#)

NO>>

Replace traction motor. Refer to [FRONT TRACTION MOTOR : Removal & Installation.](#)

13. CHECK INSULATION RESISTANCE OF LI-ION BATTERY

Check insulation resistance of Li-ion battery. Refer to [Diagnosis Procedure.](#)

CAUTION: