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2012 NISSAN Frontier OEM Service and Repair Workshop Manual

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YES>>

Since there is a possibility that the Li-ion battery internal high voltage circuit is shorted, check the Li-ion battery internal high voltage circuit, [GO TO 21](#).

NO>>

Replace battery heater, [GO TO 21](#). Refer to [Disassembly & Assembly\(66kWh LI-ION BATTERY\)](#), [Disassembly & Assembly\(91kWh LI-ION BATTERY\)](#).

14. CHECK HIGH VOLTAGE JUNCTION BOX

1. Disconnect high voltage junction box. Refer to [HIGH VOLTAGE JUNCTION BOX : Disassembly & Assembly](#).
2. Check for short between high voltage junction box terminals.

High voltage junction box		Resistance
+	-	
Terminal		Larger than 3 kΩ
P	N	

Is the inspection result normal?

YES>>

[GO TO 15](#).

NO>>

Replace high voltage junction box, [GO TO 21](#). Refer to [HIGH VOLTAGE JUNCTION BOX : Disassembly & Assembly](#).

15. CHECK ON-BOARD CHARGER

1. Remove on-board charger. Refer to [ON-BOARD CHARGER : Disassembly & Assembly](#).
2. Check for short between on-board charger terminals.

On-board charger		Resistance
+	-	
Terminal		Larger than 3 kΩ
13	14	

Is the inspection result normal?

YES>>

[GO TO 16](#).

NO>>

Replace on-board charger, [GO TO 21](#). Refer to [ON-BOARD CHARGER : Disassembly & Assembly](#).

16. CHECK DC/DC CONVERTER

1. Remove DC/DC converter. Refer to [DC/DC CONVERTER : Disassembly & Assembly](#).
2. Check for short between DC/DC converter terminals.

DC/DC converter	Resistance
-----------------	------------

+	-	
Terminal		
8	9	Larger than 3 kΩ

Is the inspection result normal?

YES>>

[GO TO 17.](#)

NO>>

Replace DC/DC converter, [GO TO 21.](#) Refer to [DC/DC CONVERTER : Disassembly & Assembly.](#)

17. CHECK HIGH VOLTAGE HARNESS-4

1. Disconnect inverter (front) harness connector (H6).
2. Check for short between inverter (front) harness connector terminals.

Connection point	Inverter (front)			Resistance
	Connector	+	-	
		Terminal		
Li-ion battery	H6	P	N	Larger than 3 kΩ

3. Disconnect inverter (front) harness connector (H12).
4. Check for short between inverter (front) harness connector terminals.

Connection point	Inverter (front)			Resistance
	Connector	+	-	
		Terminal		
High voltage junction box	H12	P	N	Larger than 3 kΩ

Is the inspection result normal?

YES>>

[GO TO 18.](#)

NO>>

Replace the error-detected high voltage harness, [GO TO 21.](#)

18. CHECK INVERTER (FRONT)

Check for short between inverter (front) terminals (H6 side).

Inverter (front)		Resistance
+	-	
Terminal		
P	N	Larger than 3 kΩ

YES>>

[GO TO 19.](#)

NO>>

Replace inverter (front), [GO TO 21](#). Refer to [INVERTER \(FRONT\) : Removal & Installation](#).

19. CHECK HIGH VOLTAGE HARNESS-5

1. Disconnect Li-ion battery high voltage harness connector (H7).
2. Check for short between Li-ion battery high voltage harness connector terminals.

Connection point	Li-ion battery			Resistance
	Connector	+	-	
		Terminal		
Inverter (rear)	H7	41	40	Larger than 3 kΩ

Is the inspection result normal?

YES>>

[GO TO 21](#).

NO>>

[GO TO 20](#).

20. CHECK INVERTER (REAR)

1. Disconnect inverter (rear) high voltage harness connector (H8).
2. Check for short between inverter (rear) connector terminals.

Inverter (rear)		Resistance
+	-	
Terminal		
P	N	Larger than 3 kΩ

Is the inspection result normal?

YES>>

Replace the error-detected high voltage harness, [GO TO 21](#).

NO>>

Replace inverter (rear), [GO TO 21](#). Refer to [Removal & Installation](#).

21. REPLACE BATTERY JUNCTION BOX

Replace battery junction box. Refer to [Disassembly & Assembly\(66kWh LI-ION BATTERY\)](#), [Disassembly & Assembly\(91kWh LI-ION BATTERY\)](#).

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INSPECTION END

DTC DETECTION LOGIC

DTC		CONSULT screen terms	DTC detecting condition	
P1596	96	High voltage connector interlock	Diagnosis condition	Always
			Signal	On-board charger connector interlock detection signal
			Threshold	A non-interlock of the on-board charger high voltage connector going to the normal charge port is detected
			Detection time	—

POSSIBLE CAUSE

- Harness and connector (On-board charger high voltage connector circuit going to the normal charge port)
- VCM
- Normal charge port

FAIL-SAFE

- Quick charge is prohibited (When vehicle is stopped)
- Normal charge is prohibited (When vehicle is stopped)

1. PRECONDITIONING

1. Press the power switch for at least 2 seconds to turn the high voltage system OFF and then check that the charging status indicator is not illuminated.

**NOTE:**

When the high voltage system is turned ON, the charging status indicator blinks green with a frequency of 1 second.

2. After the high voltage system is turned OFF, open the driver's side door, get out of the vehicle, close the driver's side door and wait for at least 5 minutes.

CAUTION:

- **Since the auto ACC function causes the accessory power to be turned ON, do not perform any vehicle operation including locking the doors or opening and closing of the doors during the standby state.**

If an operation is performed, wait an additional 5 minutes from that time.

- **Check that 12V battery voltage is 11 V or more.**

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2. PERFORM DTC CONFIRMATION PROCEDURE

 With CONSULT

1. Power switch ON and wait at least 10 seconds.
2. Check self-diagnostic result in "EV/HEV".

Is DTC 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

CAUTION:

Hybrid vehicles and electric vehicles equipped with high voltage batteries may cause an electric shock or a short circuit if handled in an inappropriate way. When you inspect and service a vehicle, follow the work procedure and perform the correct tasks.

WARNING:

- When you inspect and service the high voltage wiring harnesses and components, make sure to remove the service plug in order to shut off the high voltage circuit.
- When you have removed the service plug, be sure to carry it in your pocket, or store it in the tool box in order to keep someone from accidentally connecting it during work.
- When performing high voltage system operation, be sure to wear insulating protective equipment.
- During tasks involving high voltage systems, clarify a person in charge of the tasks and do not let others touch the vehicle. When the vehicle is not being serviced, use protective items such as an electric-proof cover sheet for covering the high voltage components so as to keep someone from accidentally touching the vehicle.
- Refer to [HIGH VOLTAGE PRECAUTIONS : Precautions](#).

CAUTION:

- Setting the vehicle to the READY state with the service plug removed may cause malfunctioning. Avoid setting the vehicle to the READY state unless otherwise specified in the service manual.
- When you turned the power switch ON with the service plug removed, be sure to erase all the DTCs after trouble diagnosis.

1. CHECK CAN COMMUNICATION CIRCUIT

Perform trouble diagnosis for CAN communication circuit. Refer to [Trouble Diagnosis Flow Chart](#).

Is the inspection result normal?

YES>>

[GO TO 2](#)

NO>>

Repair or replace error-detected parts.

2. PERFORM SELF-DIAGNOSIS OF VCM

Check self-diagnostic result in “EV/HEV”.

Is DTC detected?

YES>>

Perform diagnosis for detected DTC. Refer to [DTC Index](#).

NO>>

[GO TO 3](#)

3. PERFORM SELF-DIAGNOSIS OF OBC/PD MODULE

Check self-diagnostic result in “CHARGER/PD MODULE”.

Is DTC detected other than P1596-96?

YES>>

Perform diagnosis for detected DTC. Refer to [DTC Index](#).

NO>>

[GO TO 4](#)

4. PRECONDITIONING

WARNING:

Follow the instructions below before starting the procedure.

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

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5. CHECK HIGH VOLTAGE HARNESS CONNECTOR INSTALLATION CONDITION

Check normal charge port high voltage harness connector installation condition visually and tactually.

CAUTION:

When reconnecting the high voltage harness connector, insert it slowly and directly.

Is the inspection result normal?

YES>>

[GO TO 6](#)

NO>>

Repair or replace error-detected parts.

6. CHECK HIGH VOLTAGE HARNESS CONNECTOR

1. Disconnect normal charge port high voltage harness connector.
2. Check normal charge port high voltage harness connector and normal charge port connector visually for any abnormality.

Is the inspection result normal?

YES>>

[GO TO 7](#)

NO>>

Repair or replace error-detected parts.

7. PERFORM CONFIRMATION PROCEDURE AGAIN

1. Reinstall removed parts and connectors.

2. Erase DTC.

3. Perform DTC confirmation procedure again. Refer to [Confirmation Procedure](#).

Is DTC P1596-96 detected again?

YES>>

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

NO>>

INSPECTION END

Sample

DTC Description

DTC		CONSULT screen terms	DTC detecting condition	
P1597	F1	High voltage connector interlock	Diagnosis condition	Always
			Signal	Li-ion battery connector interlock detection signal
			Threshold	The Li-ion battery high voltage connector going to the inverter (rear) is detected to not be engaged
			Detection time	Less than 1 seconds

POSSIBLE CAUSE

- Harness and connector [Li-ion battery high voltage connector circuit going to the inverter (rear)]
- VCM
- Li-ion battery

FAIL-SAFE

High-voltage system is normally stopped (When vehicle is stopped)