

Last Modified: 10-5-2010	6.4 G	From: 200907
Model Year: 2010	Model: HS250H	Doc ID: RM0000034GE00AX
Title: HYBRID / BATTERY CONTROL: COOLANT (for Inverter): ON-VEHICLE INSPECTION (2010 HS250H)		

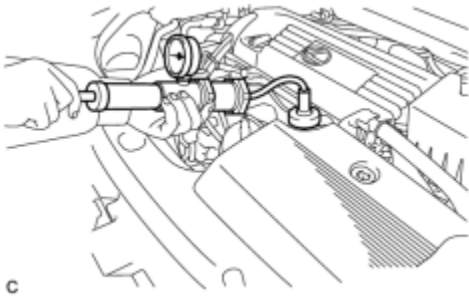
ON-VEHICLE INSPECTION

1. INSPECT FOR COOLANT LEAK (for Inverter)

(a) Remove the reserve tank cap.

CAUTION:

To avoid the danger of being burned, do not remove the reserve tank cap while the coolant for the inverter is still hot.



(b) Install the radiator cap tester.

(c) Pump the radiator cap tester to 37 kPa (0.4 kgf/ cm², 5.4 psi), and then check that the pressure does not drop.

HINT:

If the pressure drops, check the hoses, radiator, water pump, inverter with converter, and hybrid vehicle transaxle assembly for leaks.

(d) Reinstall the reserve tank cap.

2. INSPECT COOLANT LEVEL IN RESERVE TANK (for Inverter)

(a) The coolant should be between the LOW and FULL lines when the coolant for the inverter is cold.

HINT:

If the coolant level is low, check for leaks and add TOYOTA Super Long Life Coolant (SLLC) or similar high quality ethylene glycol based non-silicate, non-amine, non-nitrite, and non-borate coolant with long-life hybrid organic acid technology up to the FULL line.

3. INSPECT COOLANT (for Inverter)

(a) Remove the reserve tank cap.

CAUTION:

To avoid the danger of being burned, do not remove the reserve tank cap while the coolant for the inverter is still hot.

(b) Check for excessive deposits of rust or scale on and around the reserve tank cap and its opening.

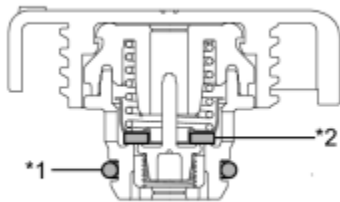
HINT:

If excessively dirty, replace the coolant for the inverter.

(c) Reinstall the reserve tank cap.

4. INSPECT INVERTER RESERVE TANK CAP (for Inverter)

(a) Inspect the reserve tank cap.



c

Text in Illustration	
*1	O-ring
*2	Rubber Packing

(1) If there are water stains or foreign matter on the O-ring, clean it with water and finger scouring.

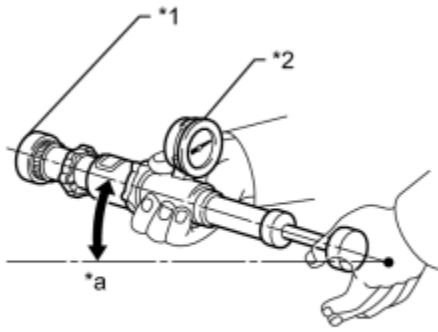
NOTICE:

Do not use any tools.

(2) Check that the O-ring is not deformed, cracked or damaged.

(3) Check that the O-ring is not swollen.

(b) Check the reserve tank cap operation.



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Text in Illustration	
*1	Reserve Tank Cap
*2	Radiator Cap Tester
*a	30° or more

(1) Apply coolant (for inverter) to the O-ring and rubber packing before using a radiator cap tester.

(2) Install the reserve tank cap to the radiator cap tester.

(3) Pump the cap tester several times, and check the maximum pressure.

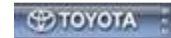
Judgment Criterion	
Standard value (for brand-new cap)	15 to 44 kPa (0.2 to 0.4 kgf/cm ² , 2.2 to 6.3 psi)
Minimum standard value (for used cap)	15 kPa (0.2 kgf/cm ² , 2.2 psi)
Pump speed	1 pump per second

NOTICE:

When using the cap tester, tilt it 30° or more.

HINT:

If the maximum pressure is less than the minimum standard value, replace the reserve tank cap.



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Model Year: 2010	Model: HS250H	Doc ID: RM000000Q1400IX
Title: HYBRID / BATTERY CONTROL: COOLANT (for Inverter): REPLACEMENT (2010 HS250H)		

REPLACEMENT

1. REMOVE NO. 1 ENGINE UNDER COVER

2. DRAIN COOLANT (for Inverter)

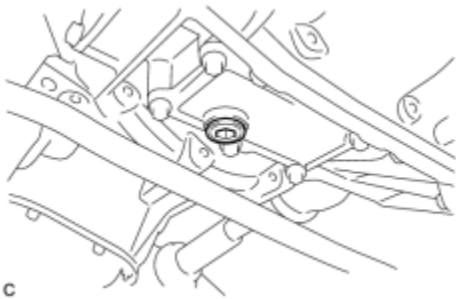
NOTICE:

- Do not reuse the drained coolant because it may contain foreign objects.
- Collect the drained coolant and measure its volume to establish a benchmark. When adding coolant, make sure to add more coolant than the measured amount.

(a) Remove the reserve tank cap.

CAUTION:

To avoid the danger of being burned, do not remove the reserve tank cap while the coolant for the inverter is still hot.



(b) Using a hexagon wrench (10 mm), remove the drain plug indicated in the illustration and drain the coolant.

CAUTION:

Use caution when handling coolant immediately after driving or in summer because it may be hot.

(c) Install the plug with a new gasket.

Torque: **39 N·m (397 kgf·cm, 29ft·lbf)**

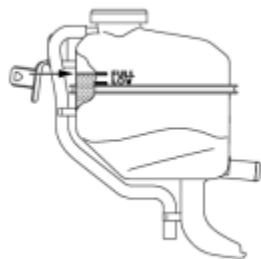
3. ADD COOLANT (for Inverter)

NOTICE:

- Do not reuse the drained coolant because it may contain foreign objects.

- If the vehicle is driven with air in the inverter cooling system, damage may occur and the following DTCs may be set.

DTC Code	Detection Item
P0A01-725	Motor Electronics Coolant Temperature Sensor Circ Range / Performance
P0A01-726	Motor Electronics Coolant Temperature Sensor Circ Range / Performance
P0A78-284	Drive Motor "A" Inverter Performance
P0A78-286	Drive Motor "A" Inverter Performance
P0A7A-322	Generator Inverter Performance
P0A7A-324	Generator Inverter Performance
P0A93-346	Inverter Cooling System Performance
P0A94-553	DC / DC Converter Performance
P0A94-557	DC / DC Converter Performance
P0AEE-276	Motor Inverter Temperature Sensor "A" Circuit Ran Performance
P0AEE-277	Motor Inverter Temperature Sensor "A" Circuit Ran Performance
P3221-314	Generator Inverter Temperature Sensor Circuit Rang Performance
P3221-315	Generator Inverter Temperature Sensor Circuit Rang Performance
P3226-562	DC/DC Boost Converter Temperature Sensor
P3226-563	DC/DC Boost Converter Temperature Sensor



c

(a) Slowly pour coolant into the reserve tank until it reaches the FULL line.

Coolant quantity:

2.9 liters (3.1 US qts, 2.6 Imp. qts.)

(b) When using the Techstream:

(1) Connect the Techstream to the DLC3.

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

(3) Enter the following menus: Powertrain / Hybrid Control / Active Test / Activate the Water Pump.

(4) Keep the coolant at the FULL line in the reserve tank to compensate for the drop in coolant level when the air bleeds.

Standard:

Air bleeding from the inverter cooling system is completed when the noise made by the water pump becomes smaller and the circulation of coolant in the reserve tank improves.

HINT:

Loud noise made by the water pump and poor circulation of coolant in the reserve tank indicates that there is air in the cooling system.

(c) When not using the Techstream:

(1) Turn the power switch on (READY). *1

(2) Turn the power switch off and add coolant to the FULL line because the coolant level drops as the air bleeds. *2

NOTICE:

- Be sure to turn the power switch off before adding SLLC.
- Do not work on the components in the engine compartment while the vehicle is in the READY-on state because the engine is in intermittent operation.

(3) Repeat steps *1 and *2 until air bleeding from the cooling system is completed.

Standard:

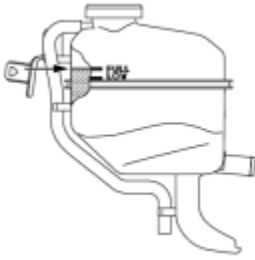
Air bleeding from the inverter cooling system is completed when the noise made by the water pump becomes smaller and the circulation of coolant in the reserve tank improves.

HINT:

Loud noise made by the water pump and poor circulation of coolant in the reserve tank indicates that there is air in the cooling system.

(d) After the air is completely bled from the cooling system, tighten the reserve tank cap.

(e) Add coolant to the FULL line of the reserve tank.



c

4. INSPECT FOR COOLANT LEAK (for Inverter) 

5. INSTALL NO. 1 ENGINE UNDER COVER

