13. High Voltage Battery Cooling System

A: REMOVAL

1. COOLING DUCT FRONT (FRONT)

1) Disconnect the ground cable from battery. <Ref. to NT-5, BATTERY, NOTE, Note.>

NOTE:

For the 12 volt engine restart battery, disconnect the ground terminal from 12V engine restart battery sensor. 2) Remove the mat - rear floor CTR.

3) Release the clips and claws, then detach the sub-trunk assembly and the spacer - rear floor side LH.



4) Remove the trim panel - rear apron LH.

(1) Remove the following parts. Refer to "Rear Quarter Trim" of "EXTERIOR/INTERIOR TRIM" section for the work procedures. <Ref. to EI-112, REMOVAL, Rear Quarter Trim.>

- Trim panel rear quarter pillar UPR LH
- Rear seat cushion assembly
- Cover side sill rear INN LH
- Trim panel rear skirt
- (2) Remove the caps, and remove the bolts.
- (3) Remove the screws, and release the clips.
- (4) Disconnect the connectors and remove the trim panel rear apron LH.



5) Remove the backrest assembly LH. <Ref. to SE-23, REMOVAL, Rear Seat.>6) Remove the bolts, and remove the hinge assembly - rear backrest.



- 7) Remove the cooling duct front (front).
 - (1) Release the clip of the spacer rear floor front.
 - (2) Release the plastic nut and slide lock, and remove the cooling duct front (front).



2. COOLING DUCT FRONT (REAR)

WARNING:

The hybrid system includes a high voltage circuit. Mishandling could cause accidents such as electric shock or leak. Always check "CAUTION (HYBRID SYSTEM)" and perform the proper operation. <Ref. to PC-7, CAUTION (HYBRID SYSTEM), Precaution.>

1) Remove the service disconnect plug. <Ref. to HEV-15, REMOVAL, Service Plug.>

2) Release the clips and claws, then detach the sub-trunk assembly and the spacer - rear floor side.



- 3) Remove the spacer rear floor front.
 - (1) Release the clips, and fold back the bottom of the cover COMPL rear backrest LH and RH of the rear seat back.
 - (2) Release the clips and claws, then detach the spacer rear floor front.



4) Remove the $\text{TORX}^{\textcircled{R}}$ bolts, release the clips, and then remove the battery cover.





High Voltage Battery Cooling System

HYBRID ELECTRIC VEHICLE

- 5) Remove the cooling duct front (rear).
 - (1) Release the slide lock, clip, and harness clip.
 - (2) Release the claws, and remove the cooling duct front (rear).



3. COOLING DUCT REAR

1) Remove the mat - rear floor CTR.

2) Release the clips and claws, then detach the sub-trunk assembly and the spacer - rear floor side RH.



3) Release the clips and harness clips, then detach the cooling duct rear.



4. COOLING DUCT INVERTER ASSEMBLY

WARNING:

The hybrid system includes a high voltage circuit. Mishandling could cause accidents such as electric shock or leak. Always check "CAUTION (HYBRID SYSTEM)" and perform the proper operation. <Ref. to PC-7, CAUTION (HYBRID SYSTEM), Precaution.>

- 1) Remove the service disconnect plug. <Ref. to HEV-15, REMOVAL, Service Plug.>
- 2) Release the clips and claws, then detach the sub-trunk assembly and the spacer rear floor side.



3) Remove the rear seat cushion and fold the backrest assemblies LH and RH. <Ref. to SE-23, REMOVAL, Rear Seat.>

- 4) Remove the spacer rear floor front.
 - (1) Release the clips, and fold back the bottom of the cover COMPL rear backrest LH and RH of the rear seat back.
 - (2) Release the clips and claws, then detach the spacer rear floor front.



5) Remove the TORX[®] bolts, release the clips, and then remove the battery cover.





6) Remove the inverter cover.

- (1) Remove the bolts and ground terminal.
- (2) Release the cable clips, and remove the inverter cover.



7) Perform zero-voltage test.

(1) Measure the voltage of the high voltage DC line at the high voltage battery side of the electric noise filter.

Preparation tool: Insulation multimeter

Standard: 0 V



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8) Remove the nut and remove the cover - shield battery and the cover - shield seat.



9) Remove the bolts and nuts and disconnect the ground terminal and the power cable.

CAUTION:

- Be careful not to use excessive force when disconnecting the power cable to avoid any damage.
- Always wrap the disconnected power cable terminals with insulating tape.



10) Remove the cooling duct front (rear). <Ref. to HEV-62, COOLING DUCT FRONT (REAR), REMOVAL, High Voltage Battery Cooling System.>

11) Remove the cooling fan assembly. < Ref. to HEV-70, COOLING FAN ASSEMBLY, REMOVAL, High Voltage Battery Cooling System.>

- 12) Remove the inverter assembly.
 - (1) Remove the bolts to remove the inverter shield.
 - (2) Remove the bolts and disconnect the bus bars between the high voltage battery and electric noise fil-

ter and between the electric noise filter and electric oil pump inverter respectively.

CAUTION:

Always wrap the high voltage battery terminal with insulating tape.



- (3) Disconnect the connector.
- (4) Remove all the mounting bolts of the high voltage battery to make the battery free.
- (5) Remove the bolts, and then detach the ground terminal and the inverter assembly.

CAUTION:

Be careful not to damage the duct seal located underneath the high voltage battery.



- 13) Remove the cooling duct inverter assembly.
 - (1) Release the clips and hooks, then remove the duct inverter IN (a).
 - (2) Remove the bolt.
 - (3) Release the clips and harness clips, then remove the duct inverter OUT (b).



NOTE:

Leave the harness on the inverter frame assembly side.

5. COOLING FAN ASSEMBLY

1) Disconnect the ground cable from battery. <Ref. to NT-5, BATTERY, NOTE, Note.>

NOTE:

For the 12 volt engine restart battery, disconnect the ground terminal from 12V engine restart battery sensor.

2) Remove the mat - rear floor CTR.

- 3) Release the clips and claws, then detach the sub-trunk assembly and the spacer rear floor side RH.
- 4) Release the clips, then remove the trim panel rear skirt.



5) Remove the cooling duct rear. <Ref. to HEV-64, COOLING DUCT REAR, REMOVAL, High Voltage Battery Cooling System.>

6) Remove the cooling fan assembly.

- (1) Release the connector and the clip.
- (2) Remove the bolts, then remove the cooling fan assembly.



7) Release the clips, and remove the cooling fan duct from the cooling duct inverter assembly.



B: INSTALLATION

1. COOLING DUCT FRONT (FRONT)

Install each part in the reverse order of removal.

Tightening torque: 33 N·m (3.4 kgf-m, 24.3 ft-lb)

2. COOLING DUCT FRONT (REAR)

WARNING:

The hybrid system includes a high voltage circuit. Mishandling could cause accidents such as electric shock or leak. Always check "CAUTION (HYBRID SYSTEM)" and perform the proper operation. <Ref. to PC-7, CAUTION (HYBRID SYSTEM), Precaution.>

1) Install the cooling duct front (rear).

2) Install the battery cover.

Tightening torque:

- 7.5 N·m (0.8 kgf-m, 5.5 ft-lb)
- 3) Install the spacer rear floor front.
- 4) Install the rear seat cushion. < Ref. to SE-27, INSTALLATION, Rear Seat.>
- 5) Install the sub-trunk assembly and the spacer rear floor side LH.
- 6) Install the service disconnect plug. <Ref. to HEV-16, INSTALLATION, Service Plug.>

3. COOLING DUCT REAR

Install each part in the reverse order of removal.

4. COOLING DUCT INVERTER ASSEMBLY

WARNING:

The hybrid system includes a high voltage circuit. Mishandling could cause accidents such as electric shock or leak. Always check "CAUTION (HYBRID SYSTEM)" and perform the proper operation. <Ref. to PC-7, CAUTION (HYBRID SYSTEM), Precaution.>

1) Install the cooling duct inverter assembly.

Tightening torque:

6.5 N·m (0.7 kgf-m, 4.8 ft-lb)

2) Mount the high voltage battery on the high voltage battery frame assembly, then install the inverter assembly.

CAUTION:

• If the duct seal is damaged, replace it with a new part.

• Be sure that the high voltage battery is securely attached to the cooling duct inverter duct.

Tightening torque:

High voltage battery and inverter assembly: 22 N·m (2.2 kgf-m, 16.2 ft-lb) Ground terminal: 6.5 N·m (0.7 kgf-m, 4.8 ft-lb)

3) Connect the bus bar.

Tightening torque:

T1: 6.5 N·m (0.7 kgf-m, 4.8 ft-lb) T2: 7.5 N·m (0.8 kgf-m, 5.5 ft-lb)



4) Install the inverter shield.

Tightening torque:

6.5 N·m (0.7 kgf-m, 4.8 ft-lb)

5) Install the cooling fan assembly. <Ref. to HEV-73, COOLING FAN ASSEMBLY, INSTALLATION, High Voltage Battery Cooling System.>

6) Install the cooling duct front (rear). <Ref. to HEV-71, COOLING DUCT FRONT (REAR), INSTALLATION, High Voltage Battery Cooling System.>

7) Connect the ground terminal and the power cable.

CAUTION:

• When connecting the power cable, pay attention to the letters (U, V, and W) imprinted on the drive motor inverter amperage sensor body as well as on the protector of the power cable.

• Do not apply excessive force to the terminals and watch to make sure the cable is not damaged or pinched.

Tightening torque:

7.5 N⋅m (0.8 kgf-m, 5.5 ft-lb)

8) Install the cover - shield battery and the cover - shield seat.

Tightening torque:

7.5 N⋅m (0.8 kgf-m, 5.5 ft-lb)

9) Install the ground terminal and inverter cover.

CAUTION:

Check that the sound proofing material on the inverter cover is not detached or damaged.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb) 10) Install the battery cover.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

- 11) Install the spacer rear floor front.
- 12) Install the rear seat cushion. <Ref. to SE-27, INSTALLATION, Rear Seat.>
- 13) Install the sub-trunk assembly and the spacer rear floor side.
- 14) Install the service disconnect plug. <Ref. to HEV-16, INSTALLATION, Service Plug.>

5. COOLING FAN ASSEMBLY

Install each part in the reverse order of removal.

Tightening torque:

7.5 N·m (0.8 kgf-m, 5.5 ft-lb)

C: INSPECTION

1. DUCT

Check the duct for clogging, crack, or deformation. If defective, replace the duct.

2. FAN MOTOR

UNIT INSPECTION

1) Check the motor operation when battery voltage is applied between the terminals of motor.

Terminal No.	Inspection conditions	Specification	Connection diagram
4 (+) — 1 (–)	Connect battery to the terminals	Rotation	HEV00192

2) If it does not operate normally, replace the cooling fan assembly.