 HYUNDAI Technical Service Bulletin	GROUP HYBRID SYSTEM	NUMBER 22-HC-002H
	DATE AUGUST 2022	MODEL(S) Tucson Hybrid (NX4 HEV), Santa Fe Hybrid (TM HEV)
SUBJECT: REFILL INVERTER COOLANT WARNING LIGHT ON		

Description: This bulletin addresses a warning light “Refill Inverter Coolant” displayed on the instrument cluster, but inspection of the under hood blue coolant reservoir is found to be at normal level (not below “MIN” marking on the reservoir bottle).

This may be caused by poor flow of antifreeze inside the low-conductivity coolant pipe from internal debris, resulting in unusual high EWP operation being detected.

Follow the procedure outlined in this bulletin to flush/discharge debris from the cooling system and replace the blue coolant. To effectively resolve, the flushing must be performed section by section as instructed. After flushing of the cooling system is done, updated BSC-2 coolant will be installed.



Applicable Vehicles:

- Certain 22MY Tucson (NX4 HEV) Hybrid vehicles produced from 01/20/2021 - 09/26/2021
- Certain 21-22MY Santa Fe Hybrid (TM PHEV) vehicles produced from 12/18/2020 - 09/26/2021

Parts Information:

Part Name	Part Number	REMARKS
COOLANT	00232-19111	BSC-2 Blue Low Conductivity Coolant

Warranty Information:

Model	Op. Code	Operation	Op. Time	Causal Part	Nature Code	Causal Code
Tucson Hybrid (NX4 HEV), Santa Fe Hybrid (TM HEV)	00232F00	Cooling System Circuit Debris Discharge and Coolant Change	1.2 M/H	00232-19111	E83	ZZ5

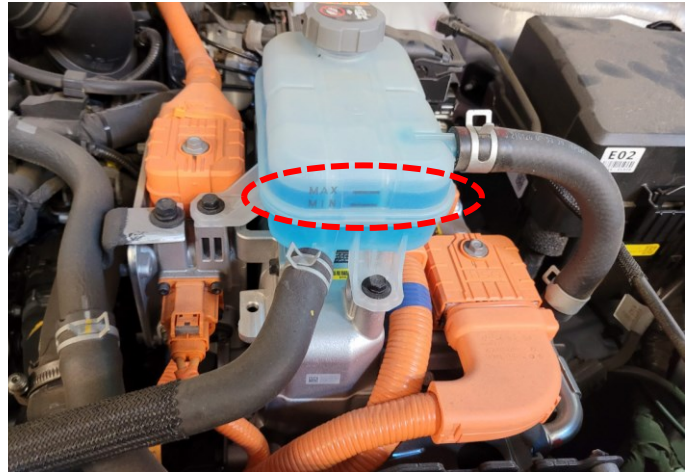
NOTE: Normal Warranty Applies.

Circulate To: General Manager, Service Manager, Parts Manager, Warranty Manager, Service Advisors, Technicians, Body Shop Manager, Fleet Repair

1. BLUE INVERTER COOLANT INSPECTION

Open the hood, visually check the amount of blue coolant in the reservoir tank:

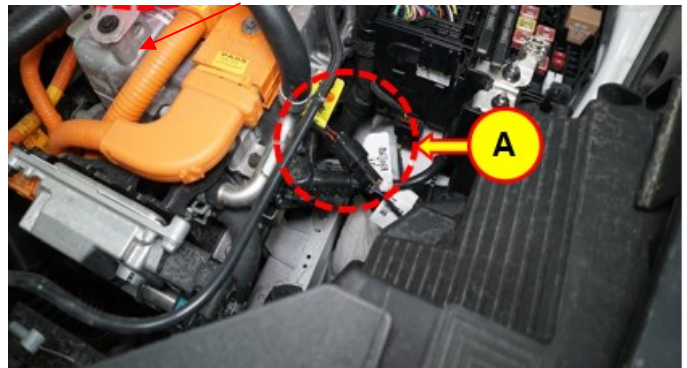
- **Coolant Level is Normal:** Proceed with this TSB.
- **Coolant Level is Low:** Fill coolant to “MAX” level and drive vehicle briefly to confirm if the “Refill Inverter Coolant” warning light disappears:
 - If the warning light still appears, then proceed with this TSB.
 - If the warning light no longer appears, this TSB does not apply.



2. HPCU/OPU/RADIATOR CLEANING

Remove the High Voltage Service Interlock Connector (A).

Turn off the ignition switch and disconnect the 12V battery terminal.

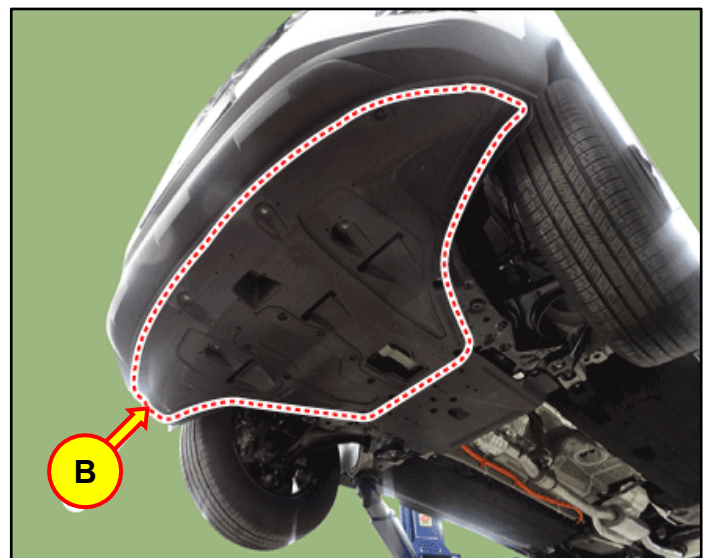


3. Remove the engine room (B) under cover.

i Information

Refer to the shop manual.
 Engine Mechanical System > Engine
 and Transaxle Assembly > Engine
 Room under Cover

Tightening torque:
 3.9 – 5.9 N.m. (0.4 ~ 0.6 kgf.m, 2.9 ~ 4.3 lb-ft)



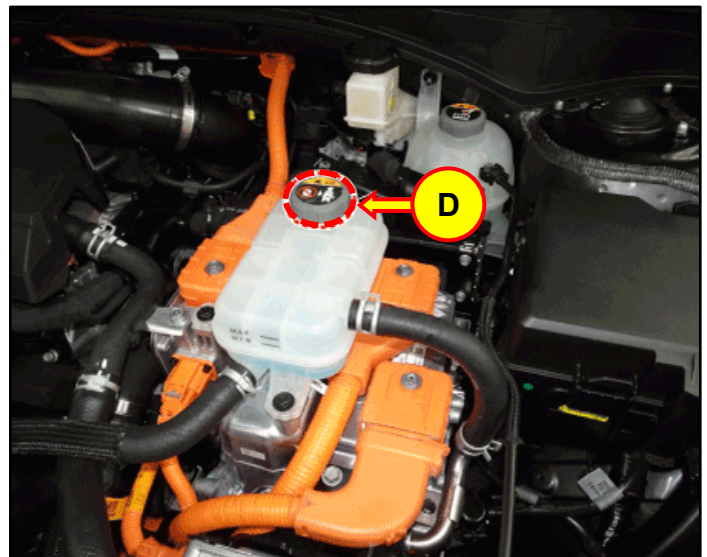
- Remove the front bumper (C).

i Information

Body (interior and exterior) > Front Bumper > Front Bumper Assembly



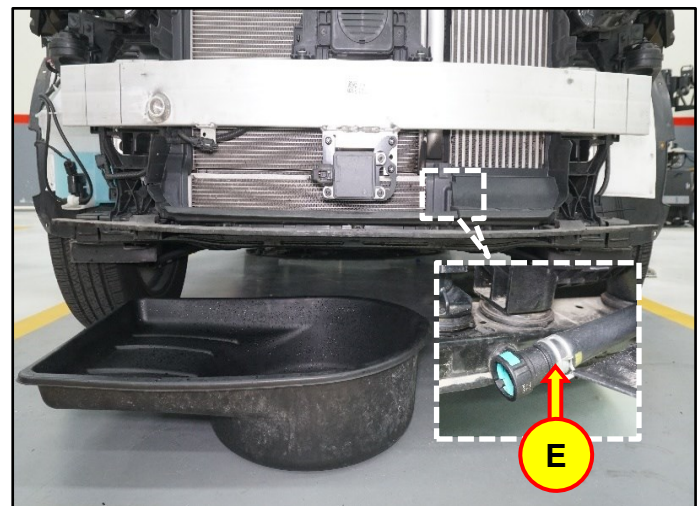
- Remove the reservoir tank cap (D).



- Remove the electric radiator and disconnect the RH lower hose (E).
(NOTE: RH means right hand side as viewing from the front of the vehicle)

i Information

**Refer to the shop manual.
Hybrid Motor System > Hybrid Motor Cooling System > Radiator**



- Fill tap water into the reservoir hose (F).

Water will begin to drain out the lower hose (H) of the RH side of the electrical Radiator.

Quickly insert an air gun (G) into the reservoir hose to flush out. Tighten the hose by hand around the air gun to prevent air from leaking out.

Repeat the above flushing operation three times to flush out the OPU/HPCU section.

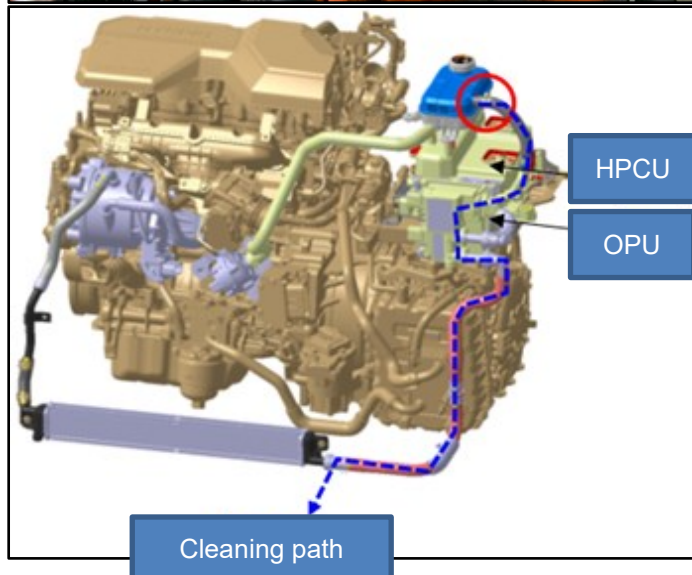
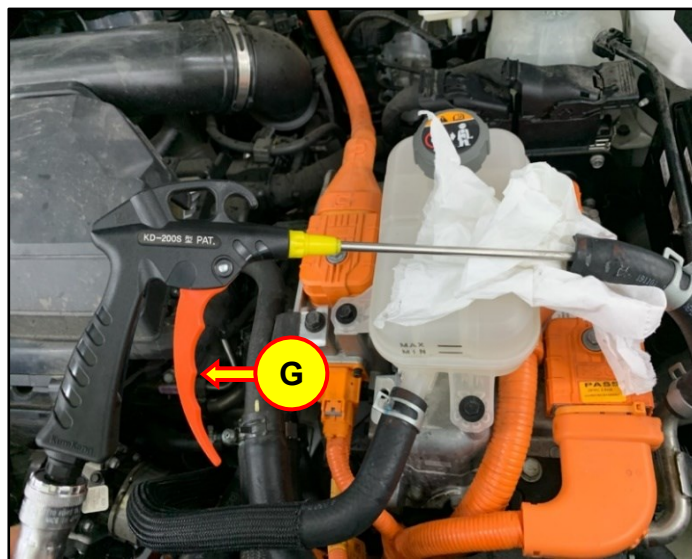
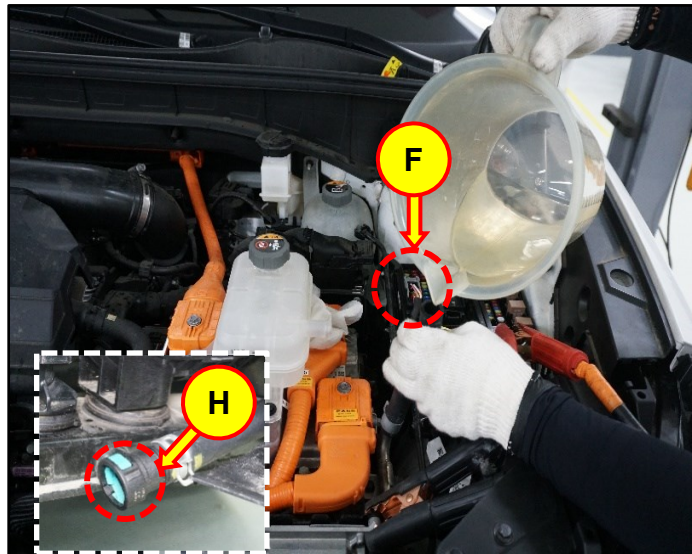
NOTICE

To create sufficient pressure for the water flushing, air blowing must be applied quickly before all water is drained out .



Information

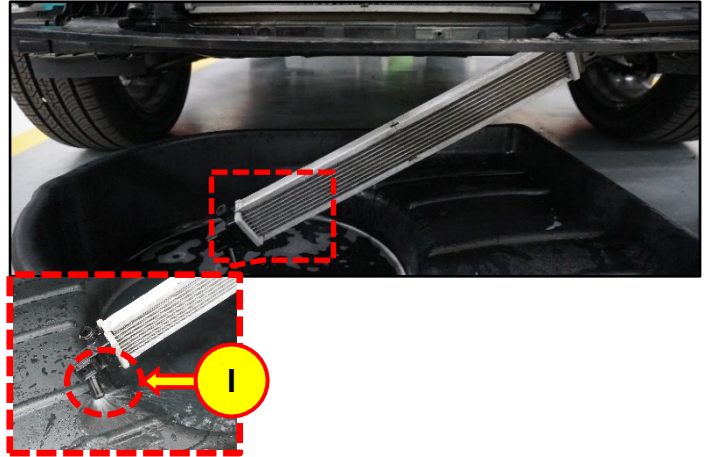
HPCU/OPU cleaning flowchart:
 Drain the coolant in the order of
 reservoir IN hose > HPCU > OPU > RH
 side hose under the radiator.



8. Reconnect the RH lower hose of the electric radiator and disconnect the LH hose (I).

NOTICE

Be careful of the coolant flow when disconnecting the LH hose.

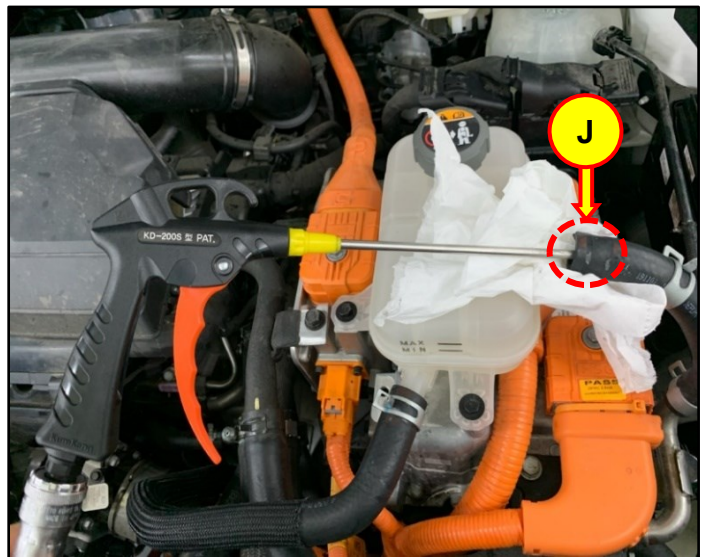


9. Fill tap water into the reservoir IN hose (J).

Water will drain out of the nipple on the radiator LH side.

Quickly insert air gun into the reservoir IN hose (J) and tighten hose by hand to the gun to prevent air leak.

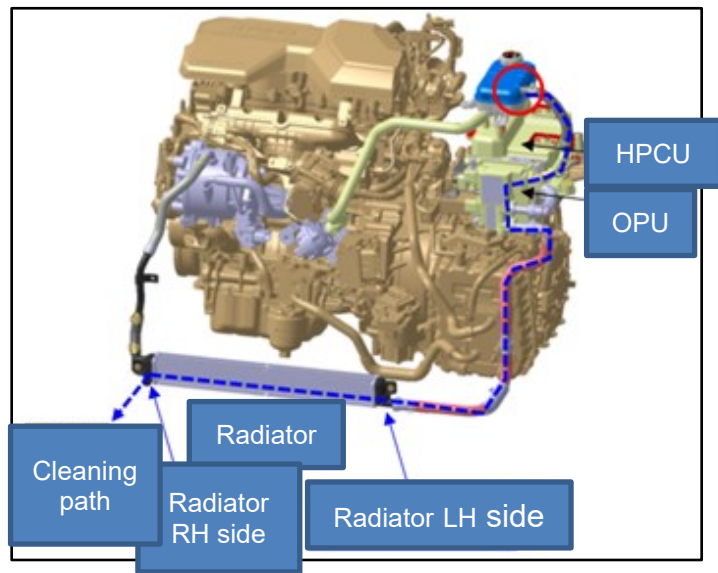
Repeat the above flushing operation three times to clean out the OPU, HPCU, and radiator section.



i Information

HPCU / OPU / Radiator cleaning flowchart:

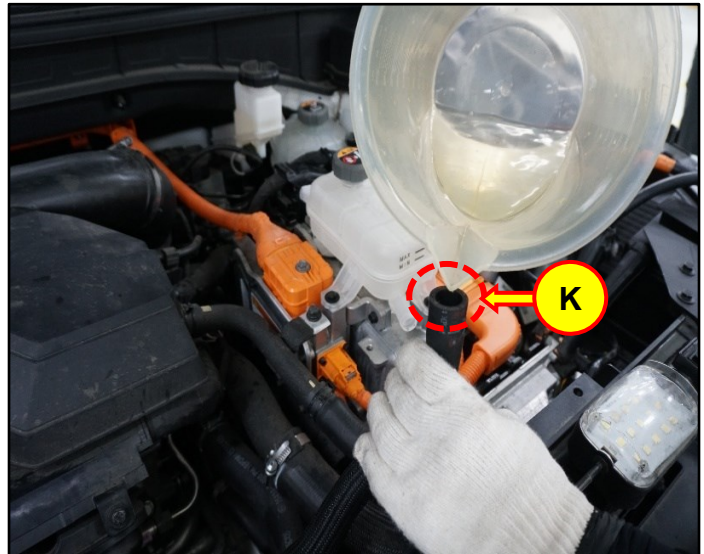
Drain the coolant in the order of reservoir IN hose > HPCU > OPU > Radiator > LH side hose under the radiator



10. EWP / HSG / RADIATOR CLEANING

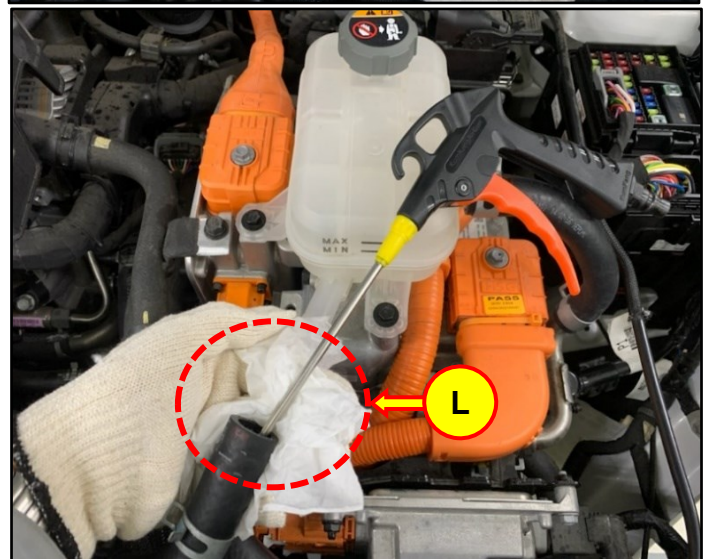
Fill the reservoir OUT hose (K) with tap water.

Water will drain out of the lower hose of the LH of the electric radiator.



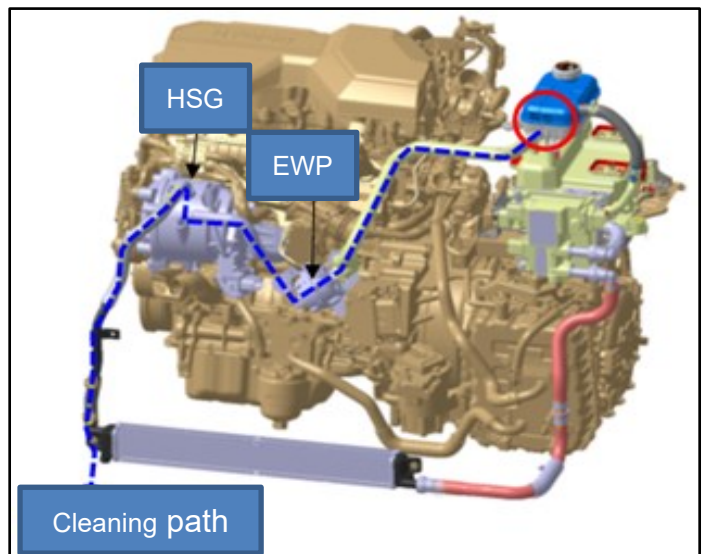
Quickly insert air gun and perform air blowing into hose (L) to flush out the HSG/EWP.

Repeat the same flushing operation three times.

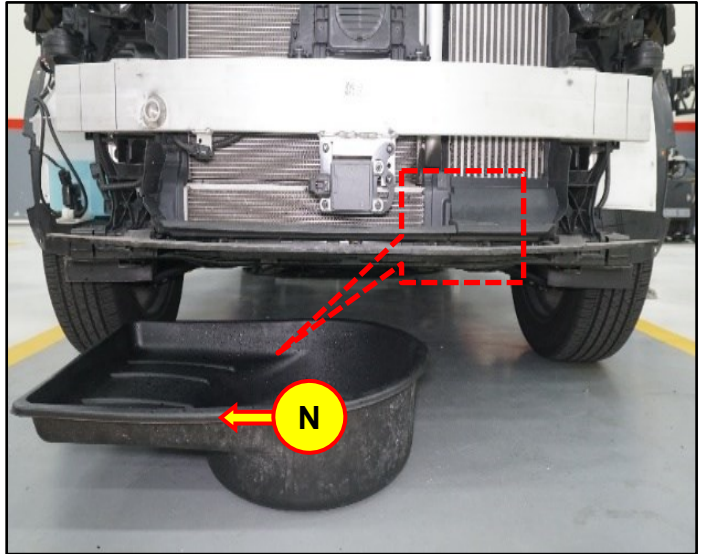
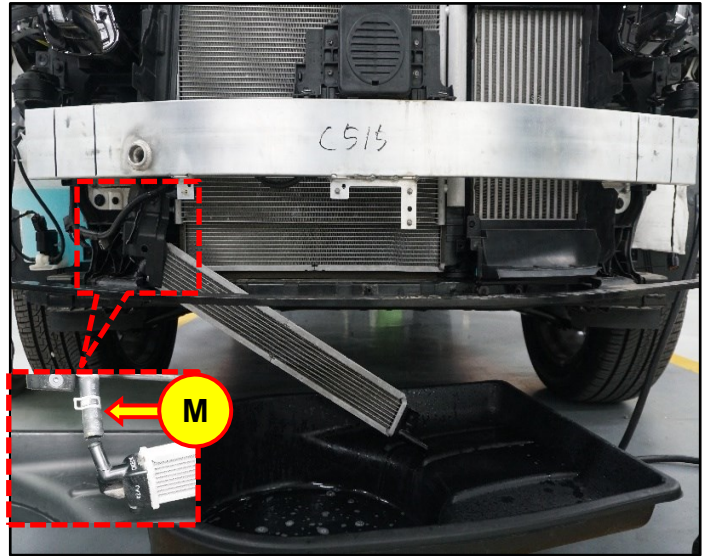


i Information

**EWP/HSG cleaning flowchart:
Drain the coolant in the order of
reservoir OUT hose > EWP > HSG > LH
side hose under the radiator.**



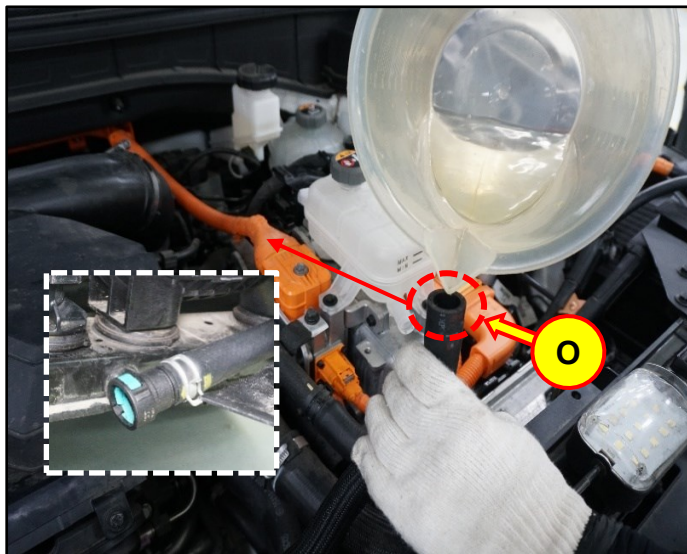
11. Reconnect the electric radiator LH lower hose (M) and disconnect the RH lower hose (N).



12. Fill tap water into the reservoir OUT hose (O).

Quickly insert the air gun into the reservoir OUT hose.

Water will drain out of the lower RH hose of the electric radiator.



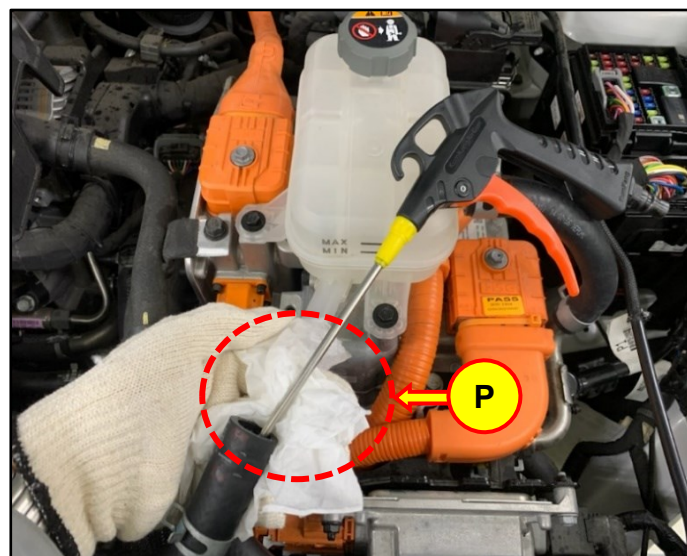
Perform air blowing into hose (P) to clean the HSG, EWP, and radiator.

Repeat the flushing operation three times.

i Information

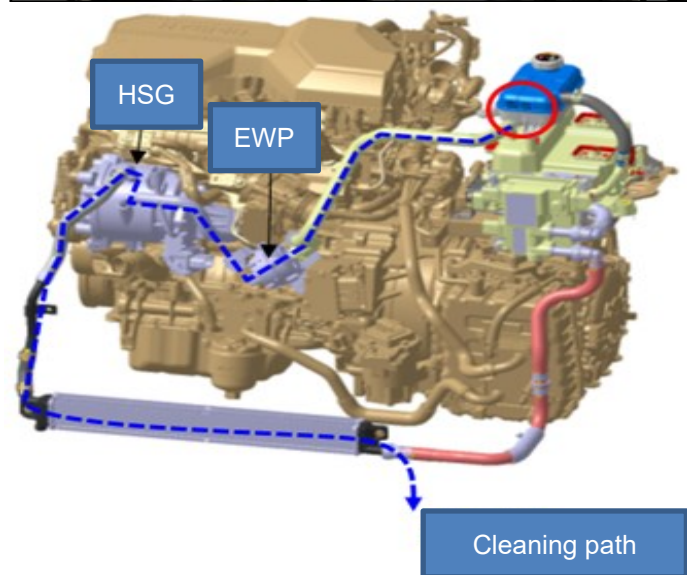
HWG / EWP /Radiator cleaning flowchart:

Drain the coolant in the order of reservoir OUT hose > EWP > HSG > radiator > RH side hose under the radiator.

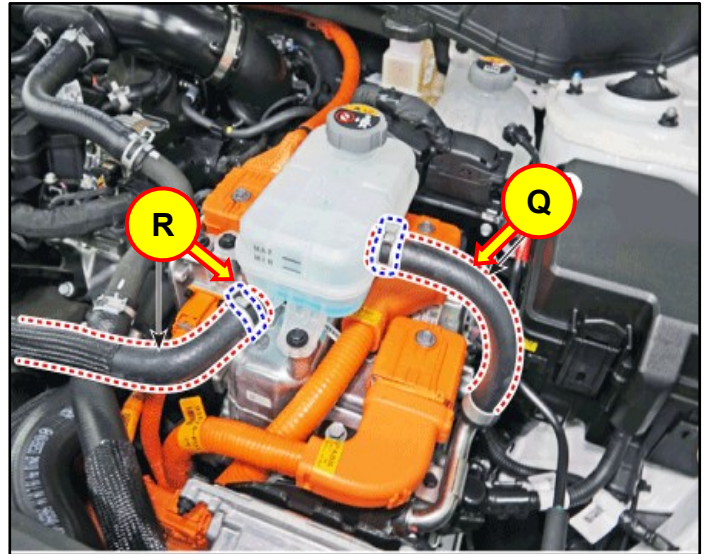


IMPORTANT

If the flow draining from the RH hose of the electrical radiator is much lower than other areas flushed earlier, remove the electrical radiator and flush directly with water from a garden hose to more thoroughly flush it out.



13. After draining the coolant from the hybrid cooling system, disconnect the reservoir IN hose (Q) and OUT hose (R).



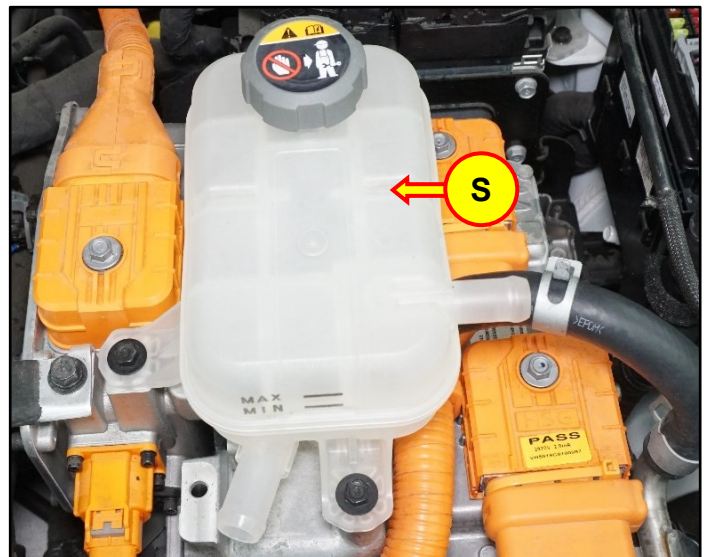
14. Remove the reservoir tank (S), fill with water, and discharge foreign substances through the nipples by using the air gun, respectively.

Tightening Torque:

7.8 – 11.8 N.m.

(0/8 ~ 1.2 kgf.m, 5.8 ~ 8.7 lb-ft)

15. Install all removed parts in the reverse order of the removal.
16. Fill the reservoir with blue BSC-2 coolant and perform air bleeding forcing EWP operation by GDS-M.



***i* Information**

Coolant fill capacity = 1.9 L

(NOTE: Do NOT mix with water)

17. Confirm the “Refill Inverter Coolant” warning light is not coming on.

Procedure is Complete.