



GROUP	MODEL
ELE	2019-2022MY Niro EV (DE EV)
NUMBER	DATE
270	April 2023

## TECHNICAL SERVICE BULLETIN

### SERVICE ACTION: INVERTER COOLANT/DEBRIS

SUBJECT: **FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE  
"REFILL INVERTER COOLANT" (SA512)**

This bulletin provides information to flush out the inverter low-conductivity coolant on certain 2019-2022MY Niro EV (DE EV) vehicles produced from May 10, 2019 through October 4, 2021, which may exhibit a "Refill inverter coolant" message displayed on the instrument cluster due to poor flow of coolant/antifreeze inside the coolant pipes. In most cases, the inverter reservoir tank coolant may be filled to normal level and no DTC's are stored due to an increase operation of the electric water pump (EWP) that is 2,450 RPMs or more when checked. Follow the procedure outlined in this publication to flush out the low-conductivity coolant/debris inside the coolant pipe and replace the inverter coolant. Before conducting the procedure, verify that the vehicle is included in the list of affected VINs.



#### NOTICE

A Service Action is a repair program without customer notification that is performed during the warranty period. Any dealer requesting to perform this repair outside the warranty period will require DPSM approval.

Repair status for a VIN is provided on WebDCS (Service → Warranty Coverage → Warranty Coverage Inquiry → Campaign Information). Not completed Recall / Service Action reports are available on WebDCS (Consumer Affairs → Not Completed Recall → Recall VIN → Select Report), which includes a list of affected vehicles.

This issue number is SA512.

# INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

SUBJECT:

## Repair Procedure:

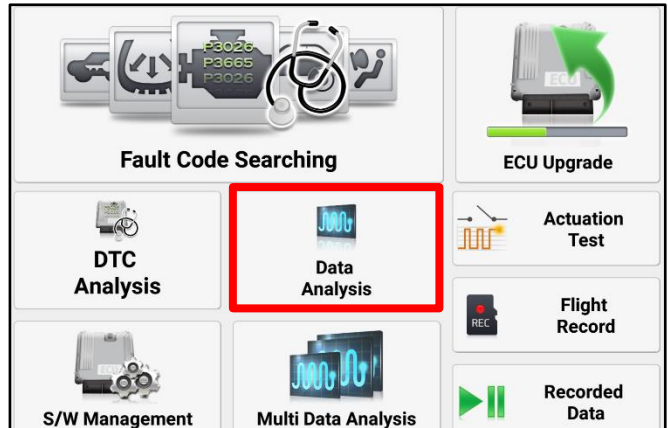
1. If the vehicle has General Type Coolant (green), this service action does not apply.

Submit a KVID photo of the green coolant filled reservoir and use Op Code 230020R2.

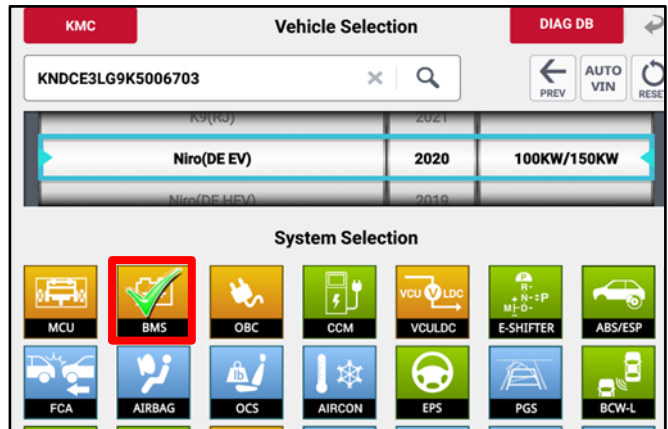
If the vehicle has Low-Conductivity Coolant (blue), continue to step 2.



2. Select 'Data Analysis' icon.



3. Select 'BMS' icon.



4. Ensure the 'Battery BTMS Valve Control Mode' is in 'Combined Mode'.

**NOTICE**

If 'Battery BTMS Valve Control Mode' is in 'Separated Mode', turn the ignition 'ON' and 'OFF' to change to 'Combined Mode'.

Sensor Name(59)	Value	Unit	HEX	LID	POS	Link U
Battery BTMS Valve Control Mode	Combined Mode		1B	0106	0B	
State of Charge of Battery(BMS)	8.5	%	11	0101	01	
BMS Main Relay ON Status	NO	-	00	0101	04	
BMS Controllable State	NO	-	00	0101	04	
BMS Warning	NO	-	00	0101	04	
BMS Fault	NO	-	00	0101	04	



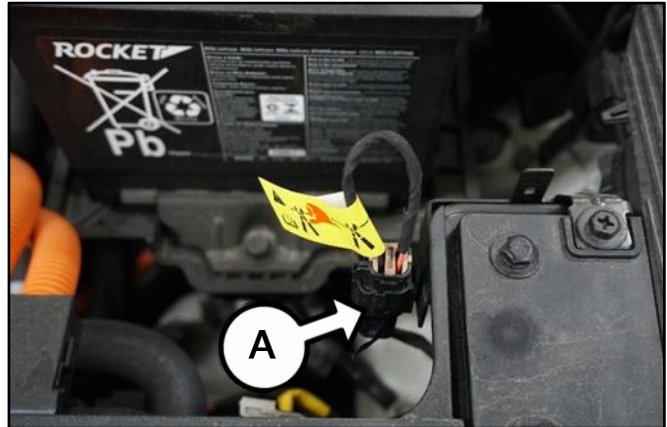
SUBJECT:

## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

5. Refer to TSB [SST080](#) 'Coolant Flushing Machine Guide' for initial setup and maintenance/cleaning instructions before beginning work.



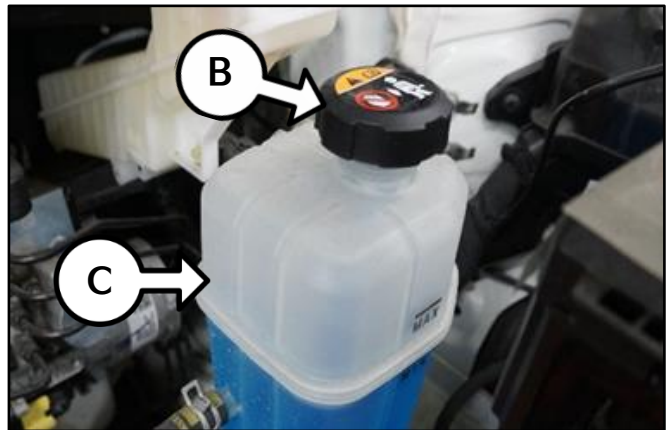
6. Open the hood and remove the service interlock connector (A).



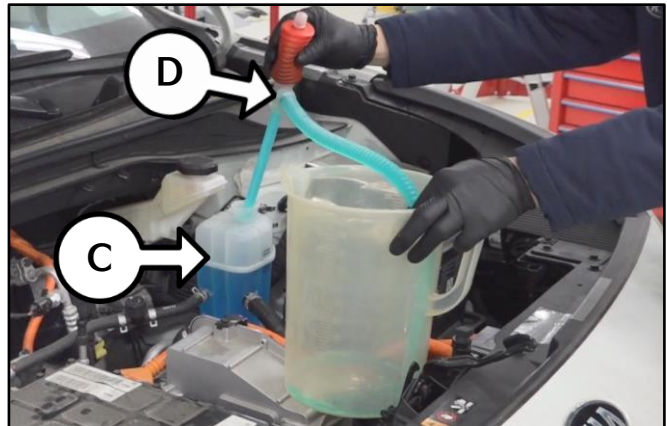
7. Remove the coolant reservoir cap (C).

### NOTICE

Coolant reservoir cap has reverse threads.



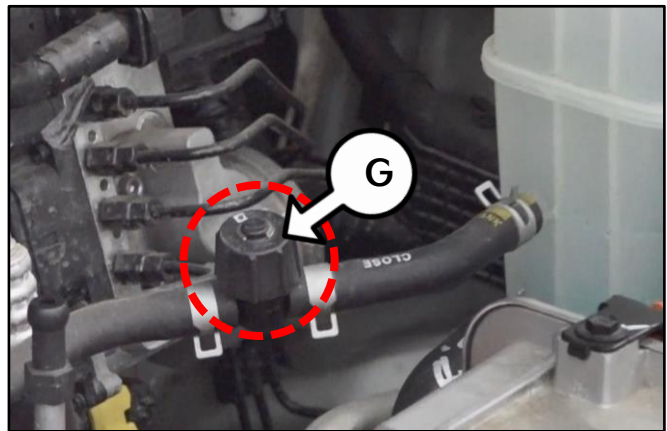
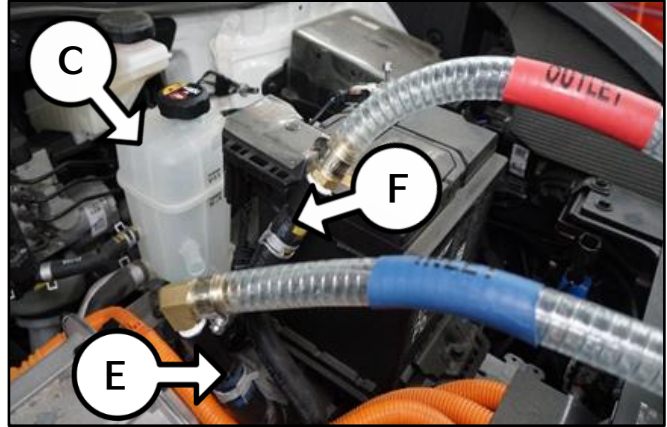
8. Drain the coolant from the reservoir (C) into an empty container using the SST kit 'syphon pump' (D).



## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

SUBJECT:

9. Remove the two (2) inlet (E) and outlet (F) circulation hoses from the coolant reservoir (C).
10. Connect the Inlet/Outlet hoses from the flushing machine to the detached circulation hoses (E and F) as shown.
11. Close the reservoir degassing valve (G).

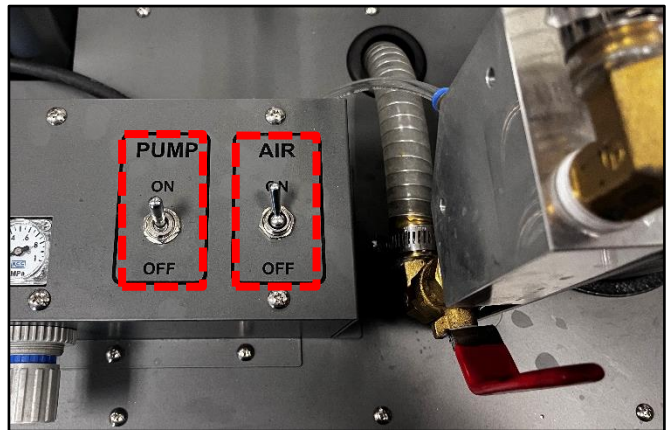


### NOTICE

If the reservoir tank degassing hose does not have a valve, cut off the flow using a hose pinch-off plier.

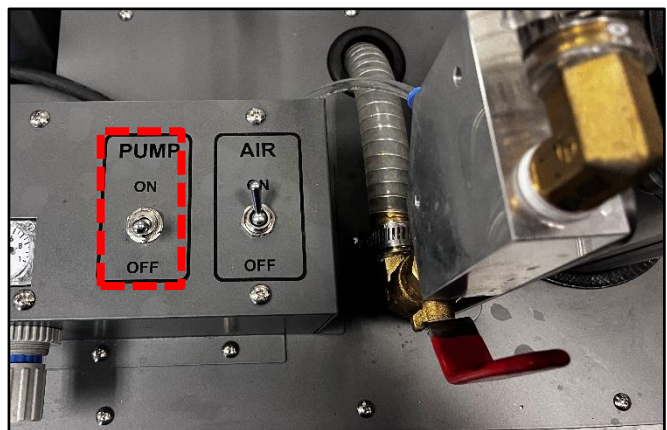
12. Turn the 'Air' and 'Pump' toggle switches on the flushing machine to the 'ON' position to begin the flushing of the coolant pipe.

**Note:** Allow machine to run for three (3) minutes.



13. After the three (3) minutes have passed, turn the flushing machine 'Pump' toggle switch to the 'OFF' position.

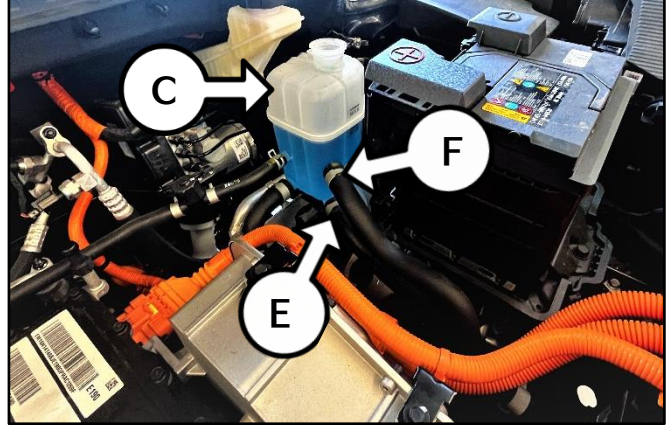
**Note:** Keep the 'Air' toggle switch in the 'ON' position to drain excess coolant remaining in line for at least thirty (30) seconds.



SUBJECT:

## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

14. Reconnect the two (2) inlet (E) bottom, and outlet (F) upper circulation hoses to the reservoir (C).



15. Remove the Motor & Reduction Gear under cover (H).



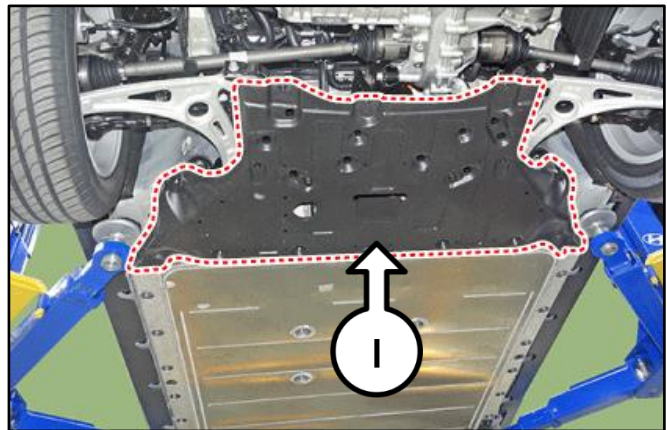
Tightening torque for bolts:  
2.9 - 4.3 lb.ft (3.9 - 5.9 N.m)



16. Remove the HV Battery lower cover (I).



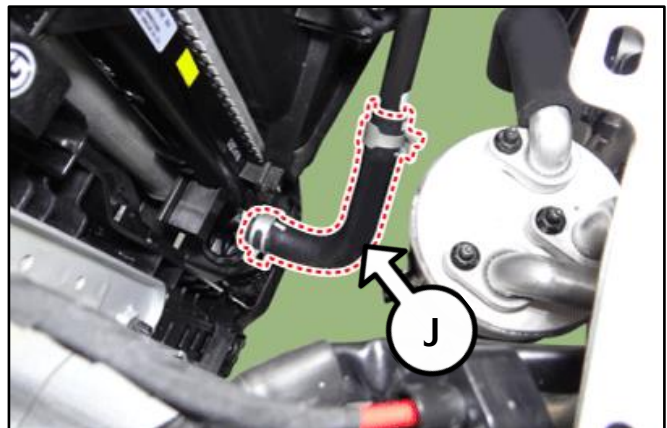
Tightening torque for bolts:  
2.9 - 4.3 lb.ft (3.9 - 5.9 N.m)



17. Disconnect the lower radiator hose (J).

### NOTICE

Capture the drained coolant into the drain pan.



## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

SUBJECT:

18. Remove the adapter from the flushing machine 'outlet' hose (K).
19. Connect the 'outlet' hose from the flushing machine to the radiator connection (K) to the radiator as shown.
20. Disconnect the electric water pump (EWP) inlet hose (L).
21. Connect the 'inlet' hose from the flushing machine to the EWP inlet hose (L) as shown.
22. Turn 'ON' the 'Air' toggle switch.

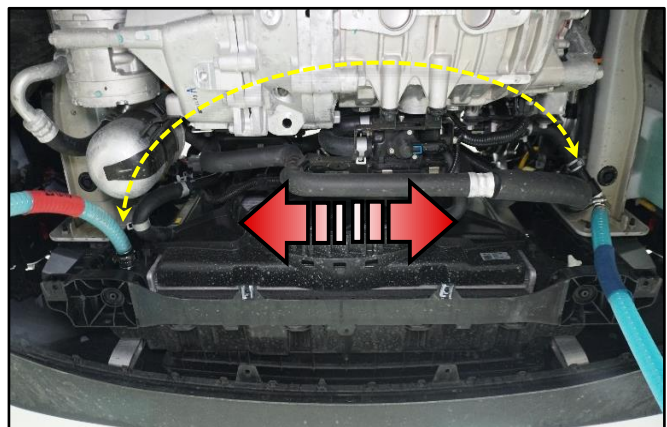
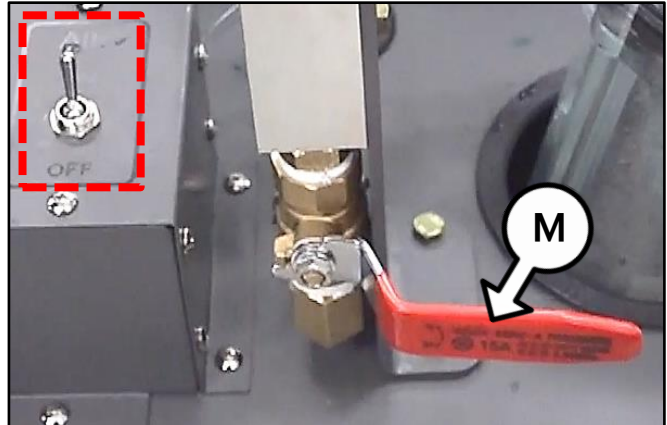
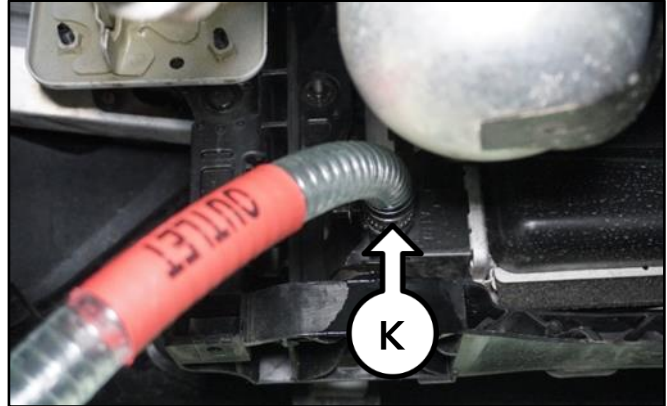
**Allow machine to run for five (5) minutes.**

**Note:** After five (5) minutes have elapsed, close the inlet valve (M) and keep the 'Air' toggle switch in the 'ON' position to drain excess coolant remaining in line for at least thirty (30) seconds.

23. Detach both of the 'Inlet/Outlet' hoses from the vehicle and then reverse (switch) the flushing machine 'Inlet/Outlet' hoses to the vehicle 'Inlet' hose to radiator and 'Outlet' hose to EWP.

**Allow machine to run for five (5) minutes.**

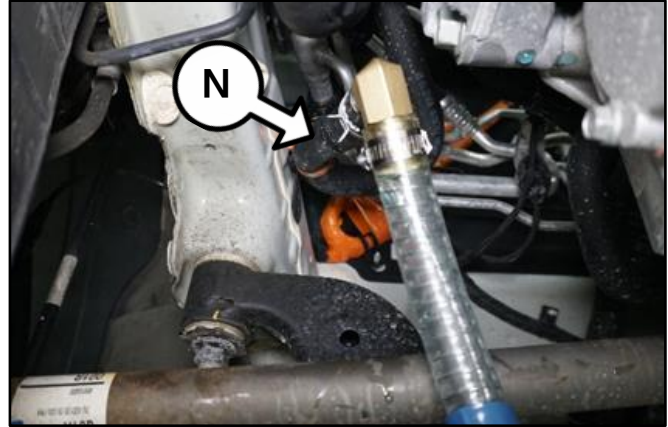
24. Repeat this step one (1) more time, reversing (switching) the flushing machine 'Inlet/Outlet' hoses (G and H) as outlined in steps 19 and 21.



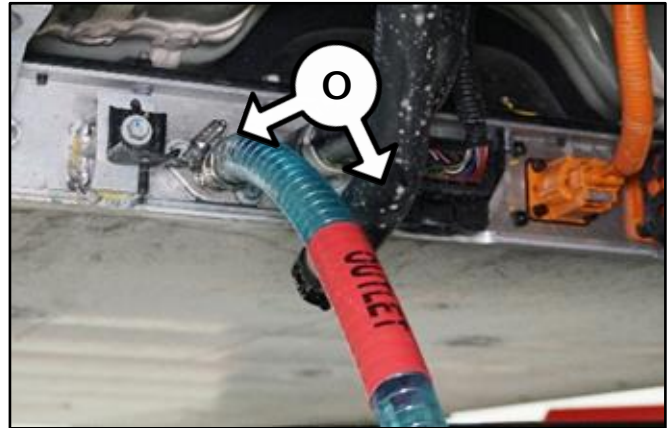
SUBJECT:

## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

25. Remove the flushing machine 'Inlet/Outlet' hoses from the vehicle and reconnect the lower radiator hose and EWP inlet hose to the vehicle in the reverse order of removal.
26. Disconnect the battery chiller outlet hose (N).
27. Connect the flushing machine inlet hose to the battery chiller outlet hose (N).



28. Disconnect the High Voltage Battery (HVB) inlet hose (O).
29. Connect the flushing machine 'outlet' hose to the HVB inlet as shown.

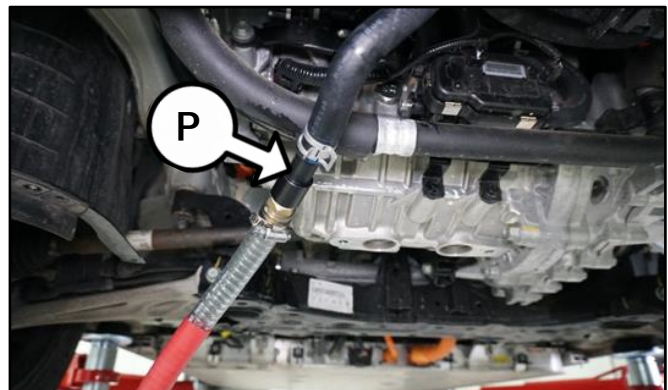


**Allow machine to run for five (5) minutes.**

30. Close the inlet valve (M) and keep the 'Air' toggle switch in the 'ON' position (refer to step 22) to drain excess coolant remaining in line for at least thirty (30) seconds.
31. Remove the flushing machine 'Inlet/Outlet' hoses from the vehicle and reconnect the battery chiller outlet hose (N) to the HVB and the battery chiller inlet hose (O) to the battery chiller.

**Note: If Equipped with Heat Pump: Proceed to steps 32 through 36. Otherwise, skip to step 37.**

32. Disconnect the waste heat chiller inlet hose (P).
33. Connect the flush machine 'outlet' hose to the waste heat chiller inlet.



## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

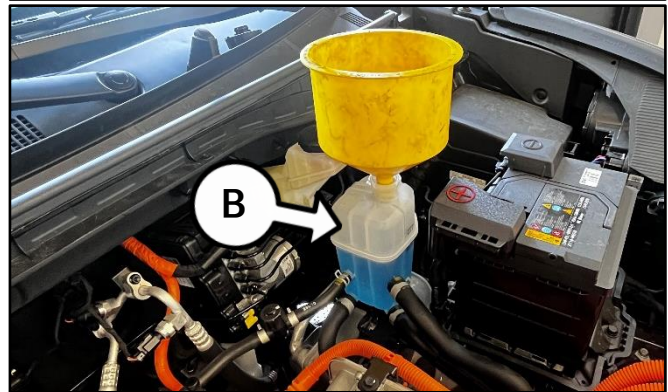
SUBJECT:

34. Lower the vehicle.
35. Disconnect the waste heat chiller outlet hose (Q) from the coolant reservoir (C).
36. Connect the flush machine 'inlet' hose to the waste heat chiller outlet (Q).

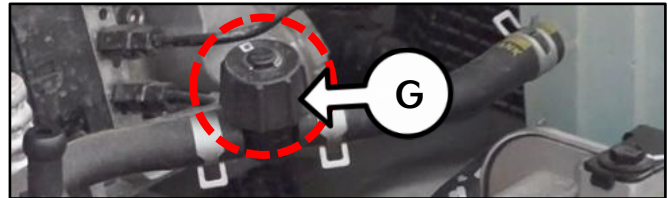
Allow machine to run for five (5) minutes.



37. Reattach the coolant reservoir (B) hoses in the reverse order of removal.
38. Fill the coolant reservoir with the applicable new coolant/antifreeze.

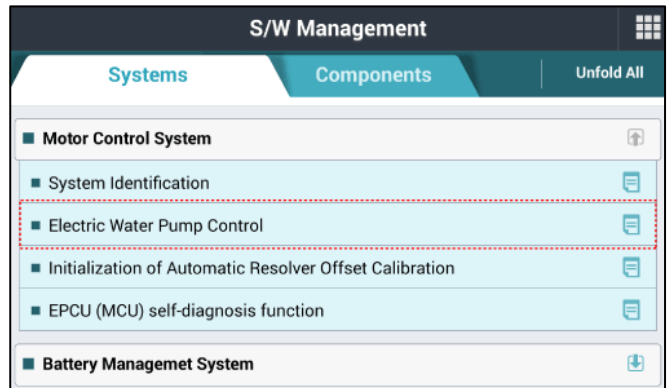


33. 'Open' the reservoir tank degassing valve (G).



34. Perform air bleeding procedure using KDS by running the Motor Control System → Electric Water Pump Control.

**Note:** Continue filling the coolant reservoir (B) with the applicable new coolant/antifreeze as needed to complete the air bleeding process.



35. Install the coolant reservoir cap (C) and secure tight.
36. Confirm normal vehicle operation.

Refer to TSB [SST080](#) 'Coolant Flushing Machine Guide' for cleaning instructions after use.




## INVERTER COOLANT/DEBRIS FLUSHING/REPLACEMENT FOR CLUSTER MESSAGE "REFILL INVERTER COOLANT" (SA512)

SUBJECT:


### AFFECTED VEHICLE RANGE:

Model	Production Date Range
Niro EV (DE EV)	May 7, 2019 to September 29, 2021

### REQUIRED TOOL:

Tool Name	Part Number	Figure	Comments
Coolant/Antifreeze Flushing Equipment Set	KQ253 CV158QQK		For service/parts contact: Snap-On Business Solutions (888) 542-1011

### REQUIRED PART:

Part Name	Part Number	Figure	Qty.
Coolant/Antifreeze	UM022 CH270		1 (2.0L)

### WARRANTY INFORMATION:

**N Code: N99 C Code: C99**

Claim Type	Causal P/N	Qty.	Repair Description	Labor Op Code	Op Time	Replacement P/N	Qty.
V	25430 Q4040	0	(SA512) Coolant Inspection	230020R2	0.2 M/H	N/A	0
			(SA512) Coolant Flushing/Replacement w/ Heat Pump	230020R1	2.0 M/H	UM022 CH270	1
			(SA512) Coolant Flushing/Replacement w/o Heat Pump	230020R0	1.8 M/H		

Note: A KVID photo of the green coolant filled reservoir must be taken and attached to the claim using Warranty Claim Attachment type 'XX - Other' for Op Code 230020R2. Claims will be subject to chargeback if photos are not submitted.

Note: Manually enter sublet code 'X2' for reimbursement of one roundtrip rideshare expense or up to three (3) days of rental expense for flushing repairs (Op Code 230020R1 or 230020R0), with supporting documentation.

#### NOTICE

VIN inquiry data for this repair is provided for tracking purposes only. Kia retailers should reference **SA512** when accessing the WebDCS system.