HYUNDAI	GROUP	NUMBER
Technical Service Bulletin	**CAMPAIGN**	**17-01-057-1**
	DATE	MODEL
	NOVEMBER, 2017	**IONIQ HYBRID (AE HEV)**

SUBJECT: TRACTION MOTOR INSPECTION AND REPLACEMENT (SERVICE CAMPAIGN T2J)

This bulletin is revised for changes in the operation times involving Traction Motor replace.

✶ IMPORTANT

***** Dealer Stock and Retail Vehicles *****

Dealers must perform this Service Campaign on all affected vehicles prior to customer retail delivery and whenever an affected vehicle is in the shop for any maintenance or repair.

When a vehicle arrives at the Service Department, access Hyundai Motor America's "Warranty Vehicle Information" screen via WEBDCS to identify open Campaigns.

Description:

Certain 2017 IONIQ HYBRID (AE HEV) vehicles may experience the following symptoms as a result of an internal coolant leak within the Traction Motor:

- Check Engine and Hybrid warning lights ON with one or more of following DTC found stored:
  - P0AA6 - Hybrid Battery Voltage System Isolation Fault.
  - P0A5F - Drive Motor A Phase U Current High.
  - P0A62 - Drive Motor A Phase V Current High.
  - P0A65 - Drive Motor A Phase W Current High.

- Vehicle may also experience reduced power at acceleration and air conditioning inoperative when the warning lights are ON.

This bulletin provides the procedure to inspect the Traction Motor and replace the Traction Motor when necessary.

Table of Contents – TSB Service Procedure Components:

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4		Flowchart summary of the general inspection and repair procedure.
5	A	Dielectric Isolation Breakdown Inspection Procedure.
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11-12	C	Procedure to Fill Coolant and Bleed Air.
13	D	Procedure to Replace the Traction Motor.

Applicable Vehicles: Certain 2017MY IONIQ Hybrid (AE HEV) vehicles.

Warranty Information:

Model	Op Code	Operation	Op Time	Causal Part	Nature Code	Cause Code
IONIQ (AE) HEV	70C060RA	COOLANT LEAKAGE INSPECTION	1.1 M/H	36500-2BDB0	E81	ZZ3
	70C060RB	COOLANT LEAKAGE INSPECTION AND MOTOR REPLACEMENT	5.3 M/H			
	70C060RC	DTC CHECK, COOLANT LEAKAGE INSPECTION	1.3 M/H			
	70C060RD	DTC CHECK, COOLANT LEAKAGE INSPECTION AND MOTOR REPLACEMENT	5.5 M/H			
	70C060RE	DTC CHECK AND DIELECTRIC BREAKDOWN INSPECTION, COOLANT LEAKAGE INSPECTION	1.4 M/H			
	70C060RF	DTC CHECK AND DIELECTRIC BREAKDOWN INSPECTION, COOLANT LEAKAGE INSPECTION AND MOTOR REPLACEMENT	5.6 M/H			
	70C060RG	DTC CHECK AND DIELECTRIC BREAKDOWN INSPECTION, MOTOR REPLACEMENT	5.1 M/H			

NOTE 1: Submit Claim on Campaign Claim Entry Screen.
NOTE 2: If a part is found in need of replacement while performing this Service Campaign and the affected part is still under warranty, submit a separate warranty claim using the same Repair Order. If the affected part is out of warranty, submit a Prior Approval Request for goodwill consideration prior to performing the work.
NOTE 3: Additional coolant replacement, if necessary, is included in the labor Op Times.

Parts Information:

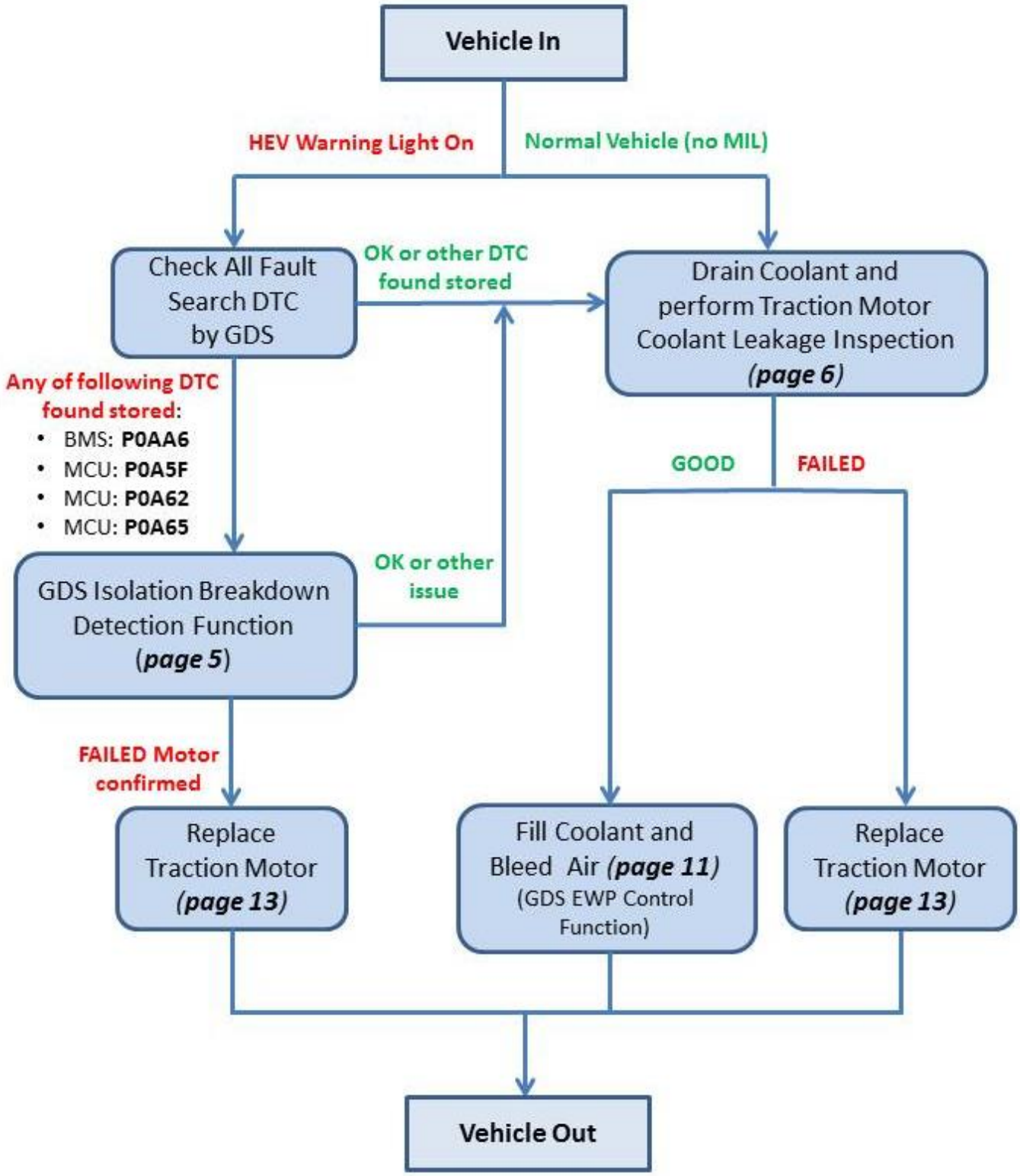
PART NAME	FIGURE / PART NUMBER	REMARK
TRACTION MOTOR	 36500-2BDB0QQH	Order only when confirmed **FAILED** by the inspection result.

Special Service Tools:

PART NAME	FIGURE / PART NUMBER	REMARK
AIR BLEEDING TOOL	 09580-3D100	**NOTE: This tool cannot be claimed to the campaign**. It's an existing required Dealer Tool. Order from Bosch 866-539-4248 if your tool is misplaced.
ADAPTER TOOL	 1K373-G5100QQH	**NOTE: Dealer will be shipped one(1) kit free of charge.** **Keep the kit together with your Air Bleeding Tool.** Additional kits can be ordered through your facing PDC.

General Service Procedure:

The following flowchart is a summary of the general inspection and repair procedure:

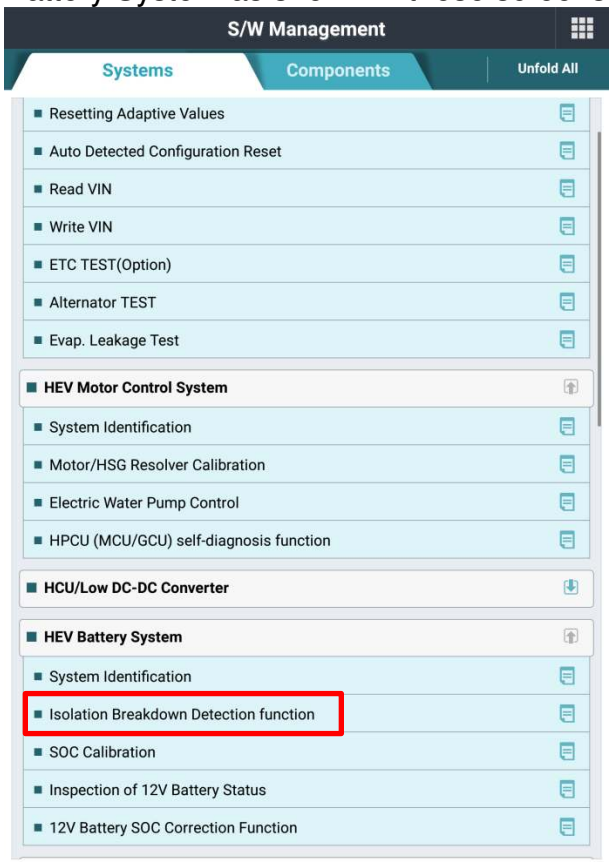


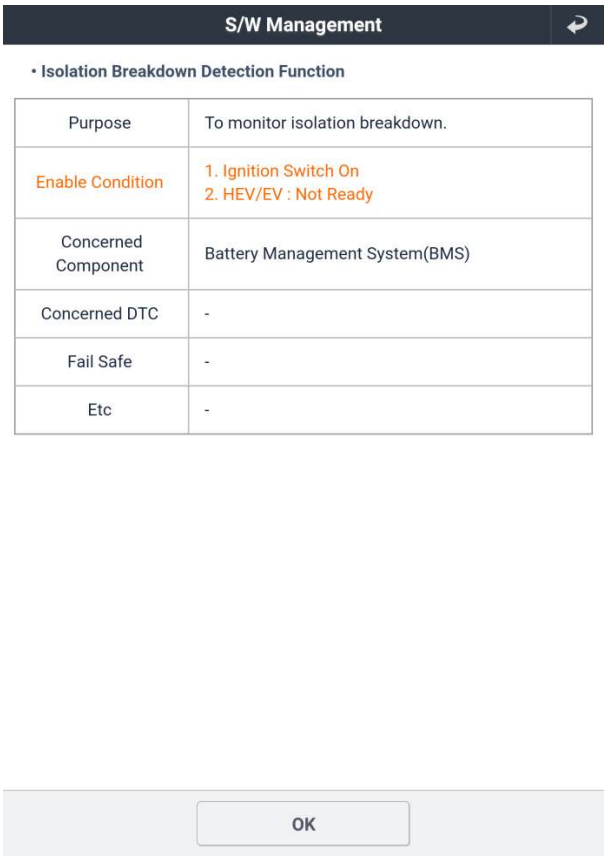
A). Dielectric Isolation Breakdown Inspection Procedure:

NOTE: *The following inspection procedure only applies for vehicles with DTC P0AA6, P0A5F, P0A62 or P0A65 found stored:*

1. Connect GDS with Ignition ON and vehicle not operating in Ready mode.

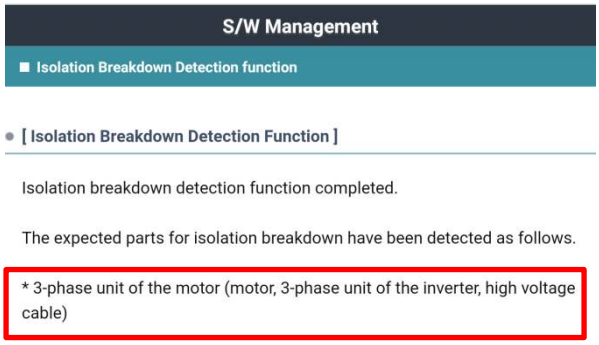
   Select **Isolation Breakdown Detection Function** within S/W Management section under HEV Battery System as shown in these screens:



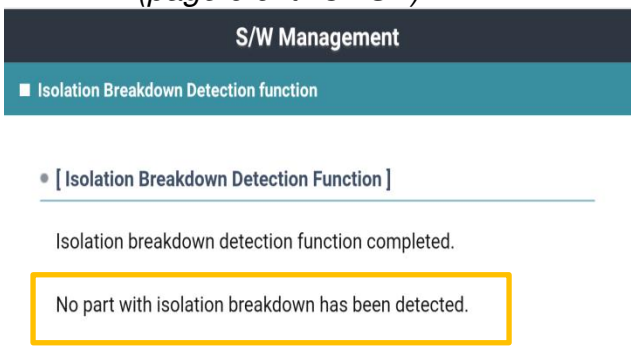


2. After result completes in approx. 3 minutes, one of the following screen results will occur:

FAILED MOTOR is confirmed by below result:
-> Go to section-D "Replace Traction Motor."
(page 13 of this TSB)



PASSED - No issue confirmed by this test:
-> Go to the next section-B "Traction Motor Coolant Leakage Inspection"
(page 6 of this TSB)



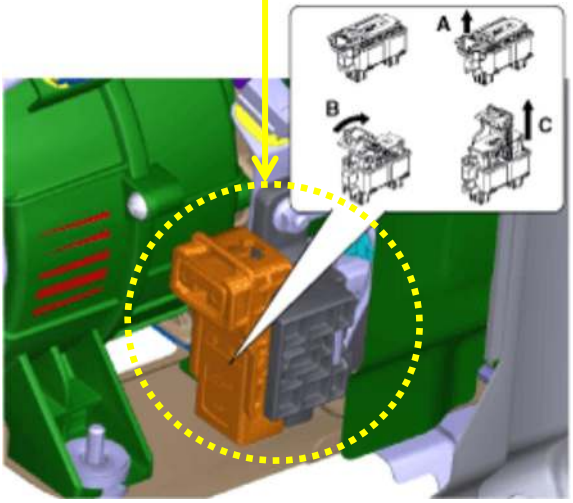
NOTE: Contact Techline if any result appears other than the above screens.

B). Traction Motor Coolant Leakage Inspection Procedure:

1. Per the HEV "General Safety Information and Caution Notice" wear insulated safety gloves when working on high voltage components that have an orange connector and cable color.

   Disconnect the high voltage safety plug by accessing the plate under the right side corner of the rear seat as shown.



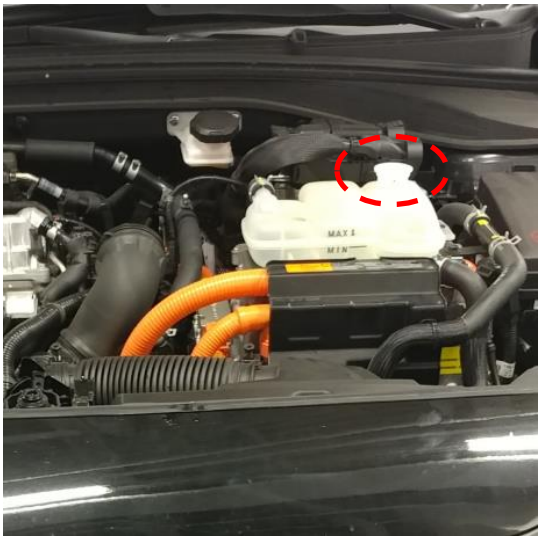


⚠WARNING

Be sure to read and follow the "General Safety Information and Caution" notice before doing any work related with the high voltage system.
Failure to follow the safety guidelines may result in serious electrical injuries**.**



2. Carefully remove the hybrid coolant reservoir cap and set it aside.



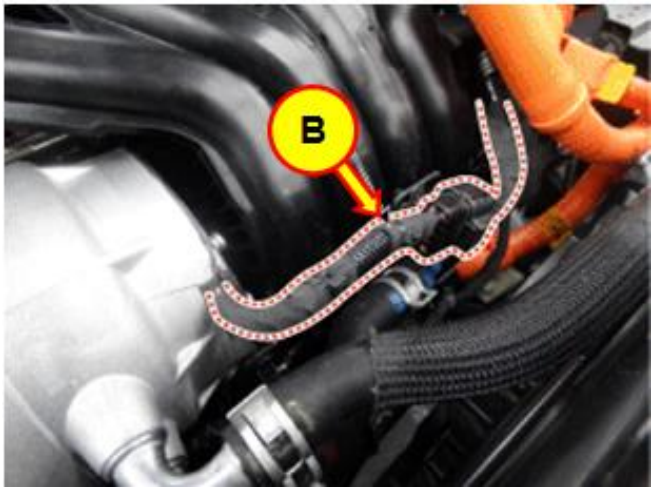
⚠WARNING

Never remove the cap when engine is hot. Serious scalding could be caused by hot fluid escaping under high pressure.

3. a) Raise vehicle on a lift.
   b) Remove the engine undercover.
   c) Fully loosen the drain plug and fully drain the hybrid coolant (A) into a drain pan.
   d) Fully close the drain plug after coolant has stopped draining.



4. a) Lower vehicle from the lift.
   b) Remove the engine cover/air filter assembly.
   c) Disconnect HSG sensor connector (B).



5. a) Loosen the 2 10mm bolts of the HSG coolant feed pipe from the intake manifold.
   b) Separate HSG coolant hose from the HSG coolant feed pipe as shown.



6. a) Raise vehicle on the lift.
   b) From under the vehicle, disconnect the coolant hose from the Traction Motor coolant inlet pipe.
   c) Allow coolant to drain from the Traction Motor inlet pipe and hose into a drain pan.
   d) Leave a shallow drain pan in place on the floor to continue to catch additional coolant that will drain out in step-7.







7. a) Lower vehicle from the lift.
   b) Blow shop air through the HSG coolant feed pipe to fully blow out residual coolant from the Traction Motor inlet pipe to the drain pan left under the vehicle from step-6.



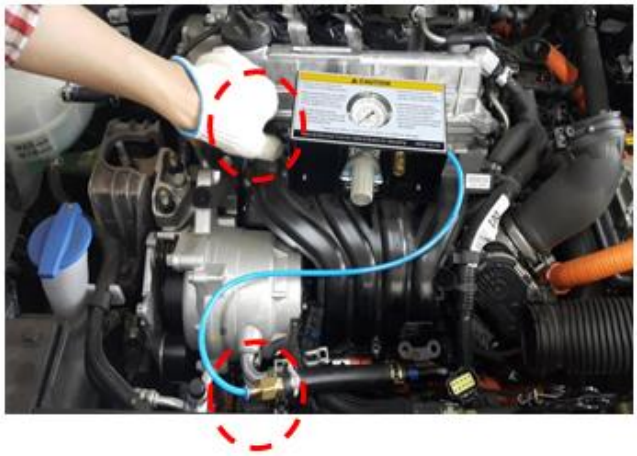
8. a) Raise vehicle on the lift.
   b) Connect Adapter Tool hose with the plug to the Traction Motor coolant inlet pipe.
   c) Ensure that the hose is secure with the provided clamp so as not to leak any air.

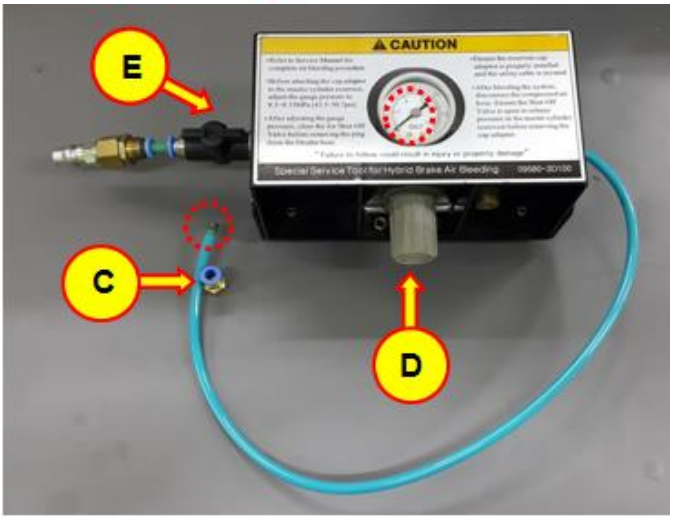


9. a) Lower vehicle from the lift.
   b) Connect Adapter Tool hose with the quick connect fitting to the HSG coolant feed pipe and secure with provided clamp so as not to leak any air.



10. Setup the Air Bleeding Tool to perform the 3-Bar Air Leak Test as follows:





   a) Install the hose (C) into the Adapter Tool quick connect fitting that was attached to the HSG coolant feed tube.

   b) Pull up on the pressure valve (D) and rotate it counter clockwise all the way to the maximum position (lowest pressure).

   c) Install pressurized shop air hose quick connect then open the valve (E).

   d) Set pressure to 3.0 Bar by pushing in and rotating the pressure valve (D) clockwise.

   e) Close the valve (E) once pressure is set at 3.0 Bar and remove the shop air hose.

   f) Keep valve (E) closed for 5 minutes and observe the final pressure result. Refer to next page for criteria of GOOD/FAILED result.

   g) After test result is concluded, relieve the pressure from the Air Bleeding Tool by rotating the valve (E) fully counter clockwise all the way to its maximum position.

   h) Remove the Air Bleeding Tool hose (C) from the Adapter Tool hose.

Air Leak Test Result:

- **GOOD**: ***Holds pressure after 5 minutes within 0.2 Bar of the original setting.:***
  - Traction Motor is OK.
  - Proceed to step 11.

- **FAILED**: ***Pressure falls more than 0.2 Bar and ends up dropping below 2.8 Bar after 5 minutes:***
  - **Traction Motor has an internal coolant leak failure and must be replaced per section-D.** *(page 13 of this TSB)*
  - Complete Step-11 then replace the Traction Motor per Shop Manual procedure.



NOTICE

In event of FAILED result confirm that the adapter tool connections were tight fitting and recheck the Air Leak test result if necessary.

11. a) Remove the Tool Adapter from the HSG coolant feed tube. Return the Tool Adaptor back into its storage bag.

    b) Reinstall the coolant hose back securely to HSG coolant feed tube and the 2 bolts to the manifold.

    Tightening torque :
    18.6 - 23.5 N.m (1.9 - 2.4 kgf.m, 13.7 - 17.4 lb-ft)

    c) Raise vehicle on lift and remove the Tool Adaptor from the Motor inlet coolant tube. Return the Tool Adapter back into the Kit storage bag.

    d) *According to the result of the Step-10 Air Leak Test:*

    i. *"GOOD" Air Leak Test Result*: **-> Go to steps 12-16** prior to filling and bleeding hybrid coolant.

    ii. *"FAILED" Air Leak Test Result: -> Go to section-D Replace Traction Motor.* ***Note:*** *S*teps 12-14 below will be performed to fill and bleed hybrid coolant after the motor is replaced.

12. Reinstall the coolant hose securely to the Traction Motor inlet coolant tube.

13. Reinstall the engine undercover, then lower the vehicle down from the lift.

14. Reinstall the engine cover/air filter assembly.

15. Reinstall the high voltage battery safety plug.

16. Go to the next section-C "Procedure to Fill Coolant and Bleed Air".

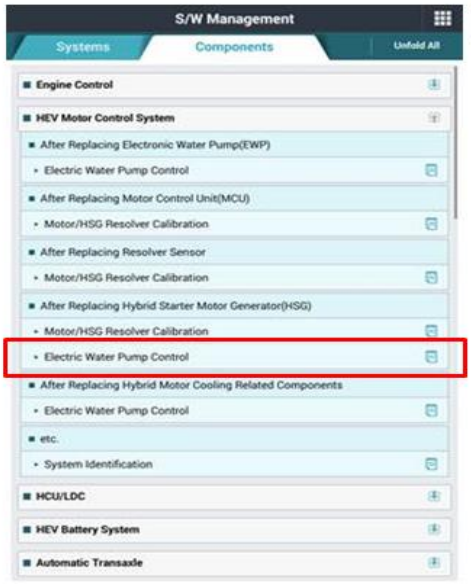
C). Procedure to Fill Coolant and Bleed Air:

1. Fill the reservoir with coolant and water mix at 45 ~ 50% mixture up to the MAX mark. Premix the water and coolant in a clean bucket prior to pouring it in the reservoir.

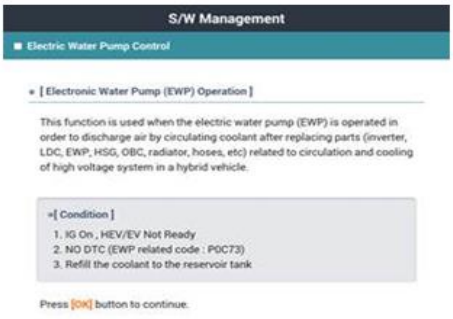
NOTICE

- Use only genuine antifreeze/coolant. Do not mix brands.
- For best year round corrosion protection the coolant must be mixed to 45% minimum. Greater than 55% will not provide sufficient protection against corrosion and freezing.

2. Perform the GDS Electric Water Pump (EWP) bleeding procedure per below steps and screenshots. Refill the hybrid coolant reservoir to between MIN and MAX while coolant is circulating.
   - From main GDS Mobile screen, select GDS "S/W Management".
   - Within "S/W Management" screen, select the "Components" tab, then choose the "Electric Water Pump Control" option.
   - With IGN ON but with READY Mode OFF, press IGN button twice without pressing the brake pedal. Select OK in the following screens to proceed.



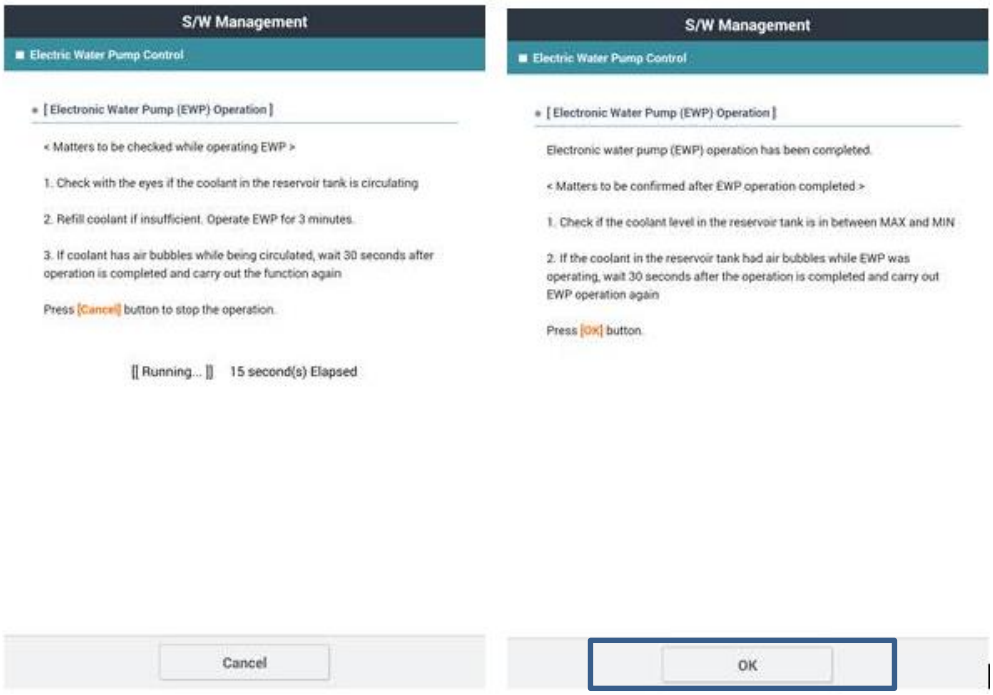




3. Bleeding of the hybrid coolant system is complete when the operating sound of the EWP becomes weak and there are no air bubbles seen in the reservoir tank. (normally takes 3-5 minutes).

> ***NOTICE***
>
> After air bleeding is complete, make sure that coolant in the reservoir flows without air bubbles during the EWP actuation. **If the coolant flow is not seen or air bubbles are still present, repeat steps 1-2 again.**
>
> **Failure to check that air is completely bled from the hybrid coolant system may result in vehicle return with "Low Coolant Warning" light.**

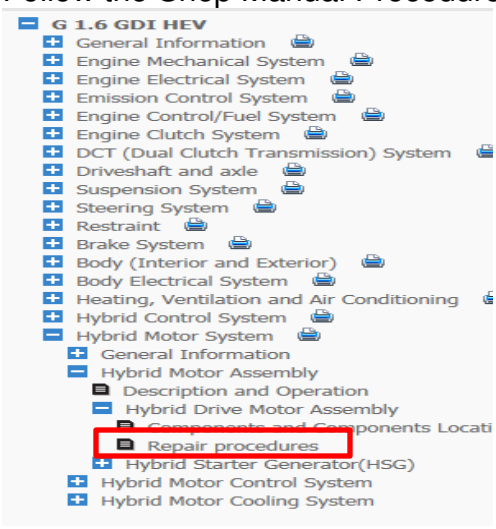
4. After air bleeding is complete, stop the GDS Mobile EWP bleeding function. Add coolant to the "MAX" level, and install the reservoir cap.



5. The "Traction Motor Coolant Leakage Inspection" Procedure is complete.

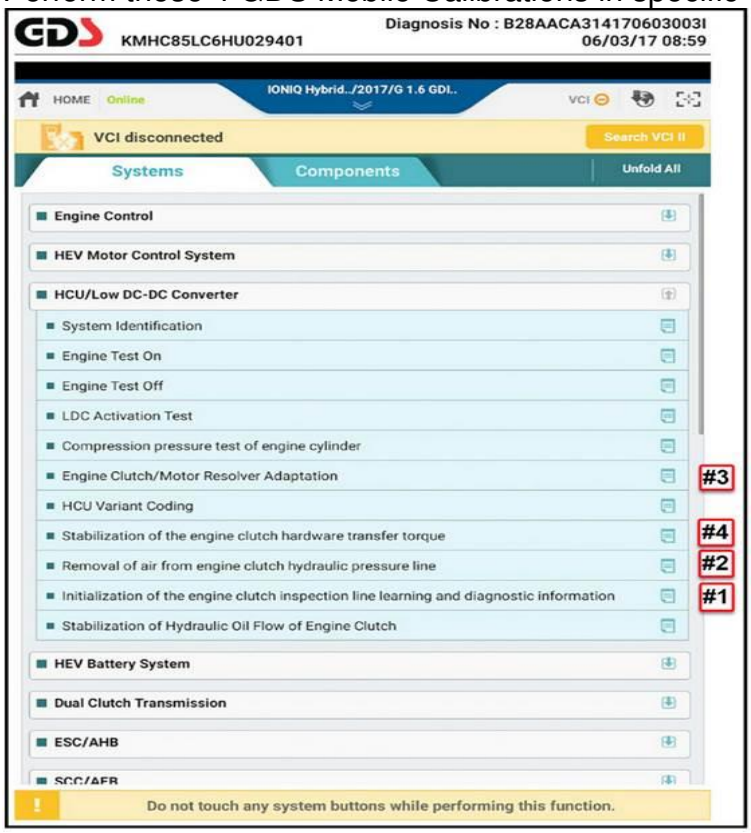
D). Procedure to Replace the Traction Motor in the section Hybrid Motor System:

1. Follow the Shop Manual Procedure located at below:



2. After replacement be sure to follow section-C “Procedure to Fill Coolant and Bleed Air”.

3. Perform these 4 GDS Mobile Calibrations in specific order as indicated below:



4. Clear DTCs and Bluelink.

5. Perform short test drive to confirm normal operation and check after test drive that the hybrid coolant level is still OK. Confirm that no DTC reoccurred.

6. Procedure is complete.