 HYUNDAI NEW THINKING. NEW POSSIBILITIES. Technical Service Bulletin	GROUP CAMPAIGN	NUMBER 17-01-010-1
	DATE FEBRUARY 2017	MODEL(S) Santa Fe (NC) Tucson (TL)
SUBJECT: ELECTRONIC STABILITY CONTROL (ESC) MODULE LOT # INSPECTION AND REPAIR (SERVICE CAMPAIGN T1J)		

This TSB supersedes 17-01-010 to clarify the tool type must be Torx Plus.

★ 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: This bulletin describes the service procedure to inspect the lot number of the electronic stability control (ESC) module of certain Santa Fe (NC) and Tucson (TL) vehicles. Parts from the affected LOT number may have damaged bolts which hold the ECU to the solenoid block. Vehicles with affected LOT number ESC modules must be inspected for damaged bolts. If the bolts are intact, they must be replaced. If the bolts are damaged, the HECU assembly must be replaced.




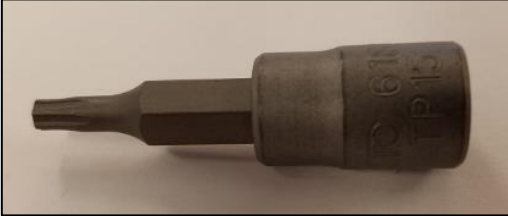
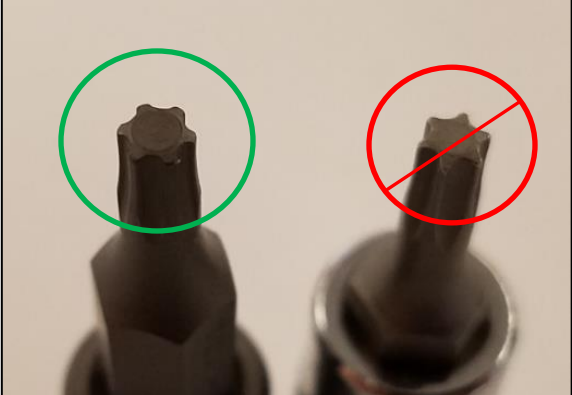
Applicable Vehicles:



Certain 2017MY Santa Fe (NC) vehicles
 Certain 2017MY Tucson (TL) vehicles

Parts Information:

PART NAME	FIGURE / PART NUMBER	REMARK
BOLT		1 part number required per vehicle (2 bolts)
	58960-HEXBOLT	
HECU		
	58920-B8AC0 (NC)	ABS/ESC
	58920-B8BC0 (NC)	ABS/ESC/SCC/AEB
Brake Fluid		Need about 1.5 bottles per vehicle when replacing HECU
	Part number: 00232-19053	

Tools Required:

Torque Wrench	TP15 Bit
 <ul style="list-style-type: none"> 1/4" drive with torque setting range from 20 inch pounds minimum. 	  <ul style="list-style-type: none"> TP15 Torx Plus bit (TP15 on left, standard Torx T15 on right)

1/4" drive extensions	Bit Holder
 <ul style="list-style-type: none"> • Various lengths, depending on TP15 bit length 	 <ul style="list-style-type: none"> • 1/4" drive bit holder for 1/4" hex shank • Holds the T15 bit securely

Warranty Information:

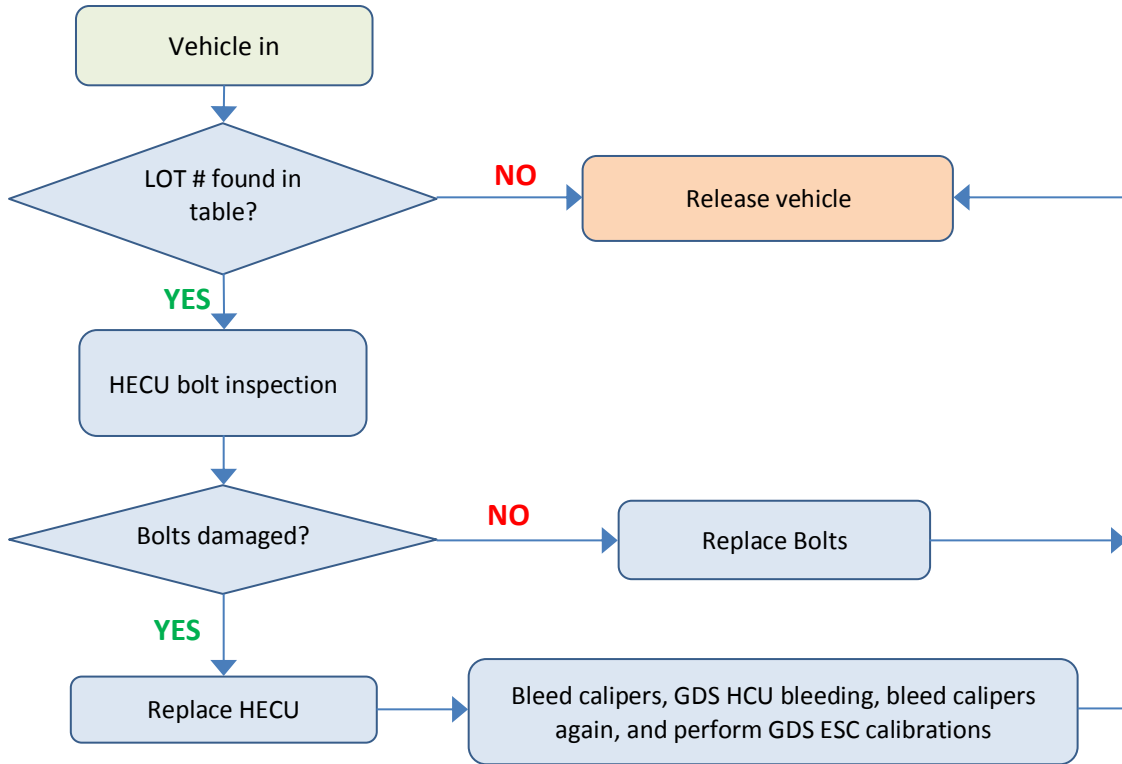
Model	Op Code	Operation	Op. Time	Causal Part	Nature Code	Cause Code				
Santa Fe (NC)	60C117R0	HECU Lot No. Inspection – PASS ONLY	0.2 M/H	58920-B8BC0 (NC)	I3B	ZZ1				
Tucson (TL)				58920-D3100 (TL)						
Tucson (TL)	60C117R1	HECU Lot No. Inspection, Bolt Inspection and Replacement	0.6 M/H	58920-D3100			I3B	ZZ1		
	60C117R2	HECU Lot No. Inspection, Bolt Inspection and HECU Replacement	1.6 M/H							
Santa Fe (NC)	60C117R3	HECU Lot No. Inspection, Bolt Inspection and Replacement	2.3 M/H	58920-B8BC0					I3B	ZZ1
	60C117R4	HECU Lot No. Inspection, Bolt Inspection and HECU Replacement	2.5 M/H							

NOTE 1: Submit Claim on Campaign Claim Entry Screen

NOTE 2: Brake fluid will be reimbursed via sublet amount on the campaign claim.




NOTE 3: If a part is found in need of replacement while performing Service Campaign T1J and the affected part is still under warranty, submit a separate 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.

Service Procedure Flow Chart



Service Procedure HECU Lot Number Inspection:

1. Open the hood and locate the ESC module. Find the label, as shown in the table below.

Model	ESC Module Location		
Santa Fe (NC), Tucson(TL)			
*ESC module is located on the passenger side firewall in the engine bay.			

2. Check the first 3 digits of the LOT number. These digits indicate the part production date.



3.
 - If the first 3 digits of the LOT number are NOT found in the applicable tables below, no further action is required. Submit a claim using labor operation code **60C117R0**. Release the vehicle for retail sale if still in dealer stock.
 - If the first 3 digits of the LOT number are found in the applicable tables below, **continue to the next service procedure to inspect the bolts (page 5 for Santa Fe, page 14 for Tucson).**

LOT # Table for Santa Fe (NC):

LOT #	LJ2	LJ3	LJ4	LJ5	LKA	LKB	LKC	LKD	LKE	LKF	LKG	LKH	LKI	LKJ
Production Date	10/28	10/29	10/30	10/31	11/1	11/2	11/3	11/4	11/5	11/6	11/7	11/8	11/9	11/10

LOT # Table for Tucson (TL):

LOT #	LJ2	LJ3	LJ4	LJ5	LKA	LKB	LKC
Production Date	10/28	10/29	10/30	10/31	11/1	11/2	11/3

NOTICE

Use the table below to decode the LOT # first 3 digits

1st digit means YEAR	H : 2012, I : 2013, J : 2014, K : 2015, L : 2016
2nd digit means MONTH	A : January ~ L : December
3rd digit means DAY	A ~ Z : 1 ~ 26 th day of the month
	1 ~ 5 : 27 ~ 31 st day of the month

Service Procedure: Santa Fe (NC) HECU Bolt Inspection and HECU Replacement

1. Open the hood and remove the engine cover.



- Remove the fastener clips, and the air intake duct.



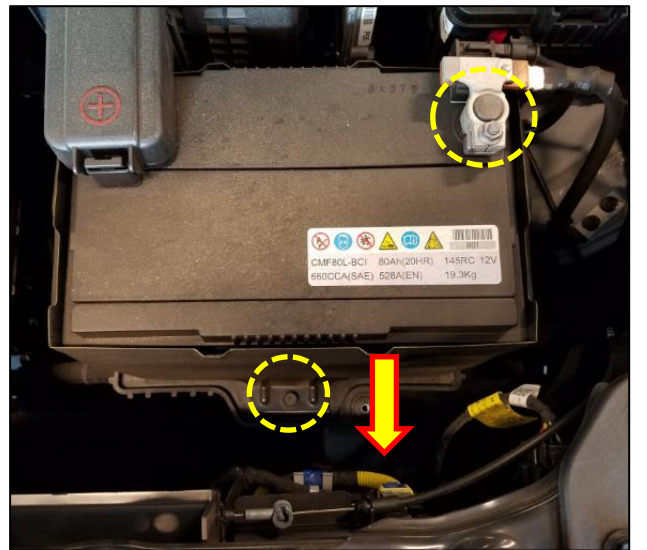
- Disconnect the negative battery terminal.

Tightening torque:
 3.9 ~ 5.8 N.m (0.4 ~ 0.6 kgf.m, 2.8 ~ 4.3 lb-ft)

Remove the battery mounting bolt and bracket.

Tightening torque:
 8.8 ~ 13.7 N.m (0.9 ~ 1.4 kgf.m, 6.5 ~ 10.1 lb-ft)

Move the battery forwards, towards the front of the vehicle to create clearance for the air cleaner box.



- Loosen and remove the air cleaner box mounting bolts.

Tightening torque:
 7.8 ~ 9.8 N.m (0.8 ~ 1.0 kgf.m, 5.7 ~ 7.3 lb-ft)



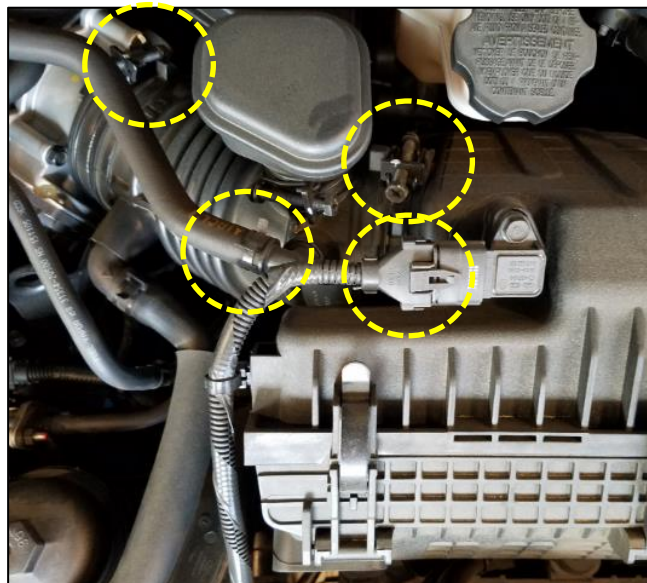
5. Disconnect the barometric pressure sensor connector.

Remove the brake vacuum hose.

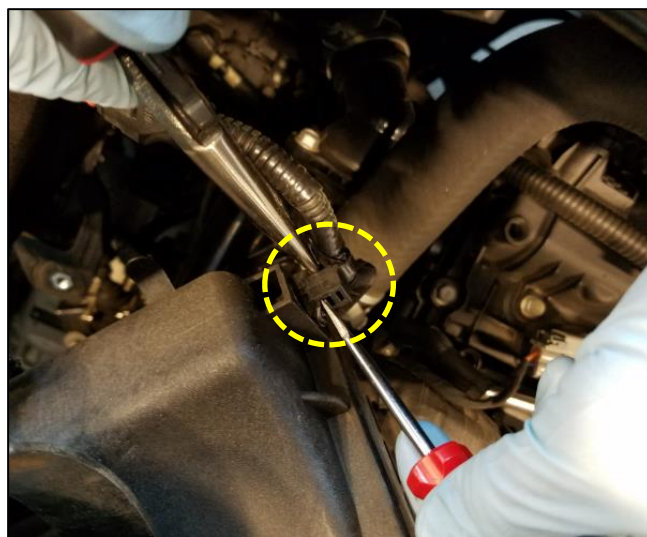
Loosen the intake hose clamps at the air cleaner box, and at the throttle body.

Tightening torque:

2.9 ~ 4.9 N.m (0.3 ~ 0.5 kgf.m, 2.1 ~ 3.6 lb-ft)



6. Disengage the wire harness cable tie for the barometric pressure sensor by releasing the cable tie with a flat screwdriver, and pulling the opposite side with pliers.



7. Remove the air cleaner box from the vehicle.

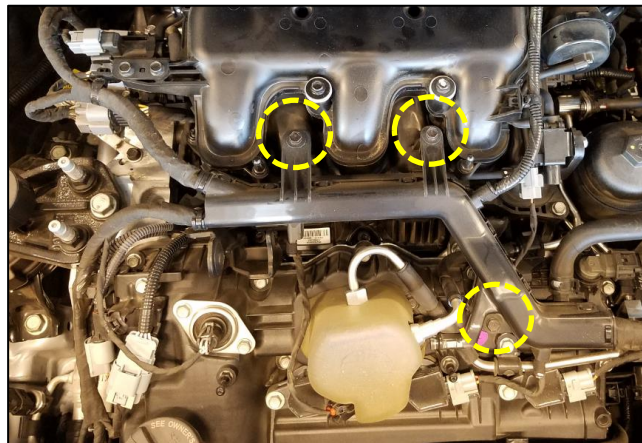
Remove the intake hose from the throttle body, and set aside out of the way.



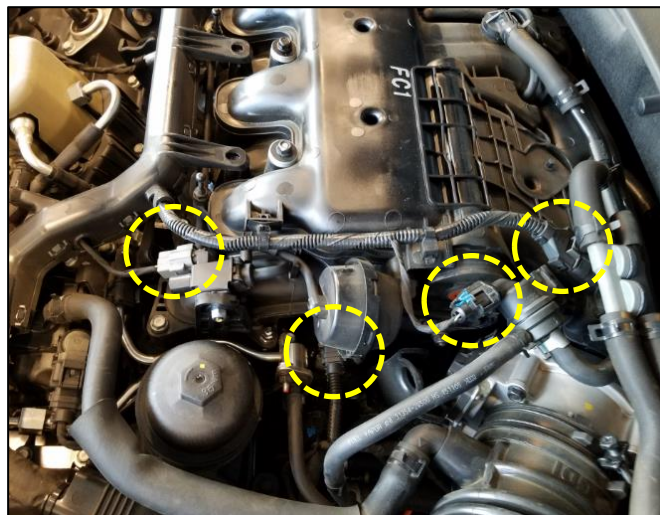
8. Remove the 3 bolts for the engine wiring harness.

Tightening torque:

9.8 ~ 10.7 N.m (1.0 ~ 1.1 kgf.m, 7.2 ~7.9 lb-ft)

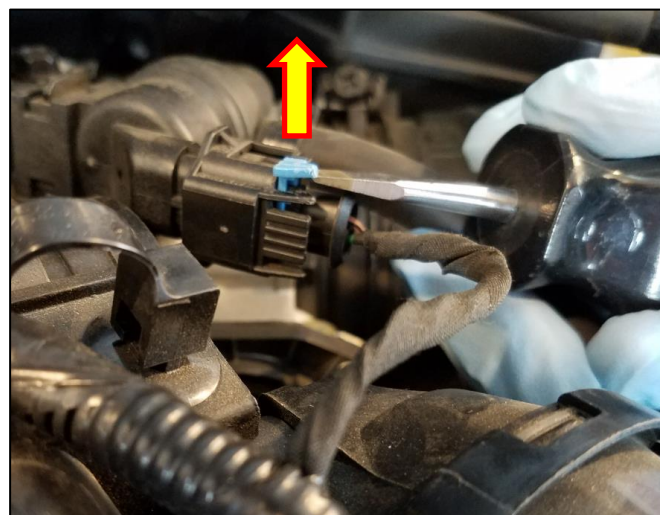


9. Disconnect the sensors on the driver's side of the intake manifold, as shown.

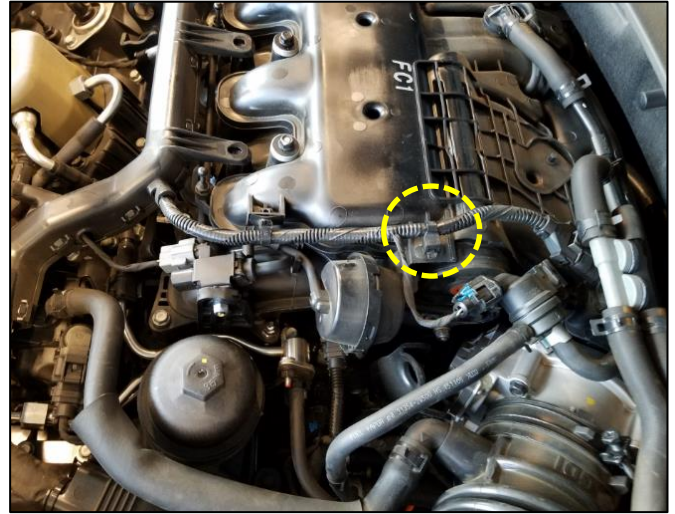


NOTICE

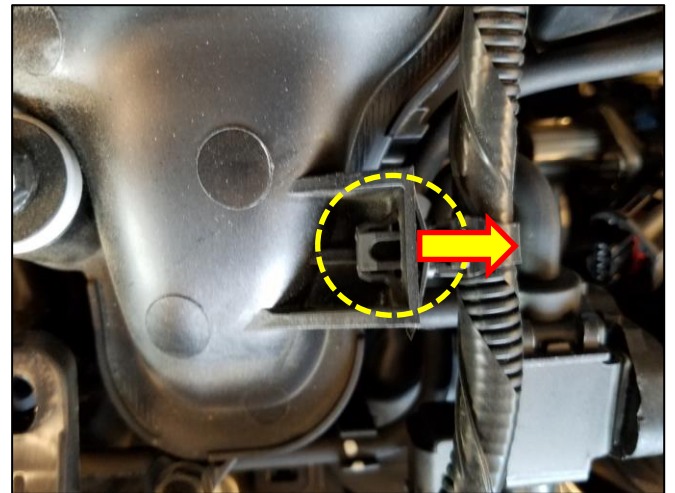
Remove this connector by prying the blue tab upwards, then squeezing the release and pulling.



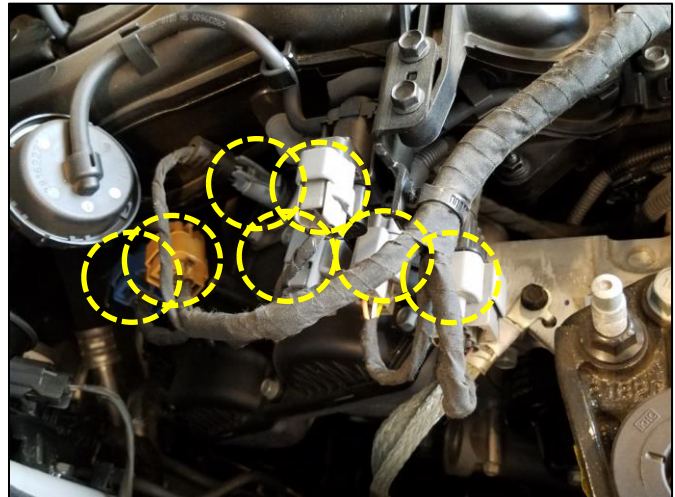
10. Disengage the harness cable tie using the method described in step 6.



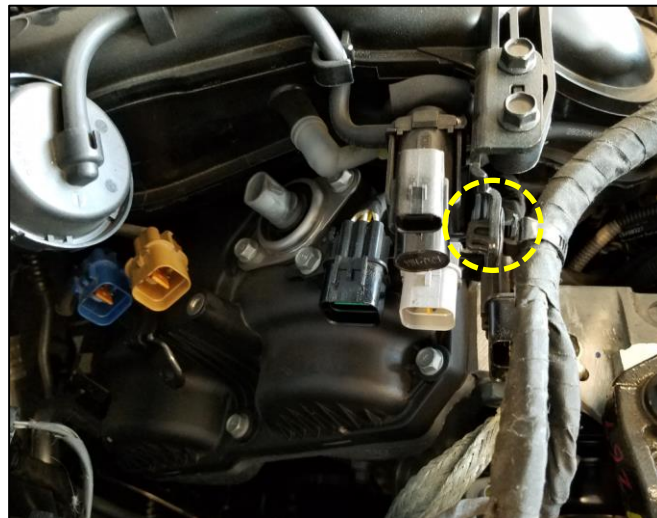
11. Disengage the harness cable tie using a pair of needle nose pliers to squeeze the sides of the clip, and then pushing it out.



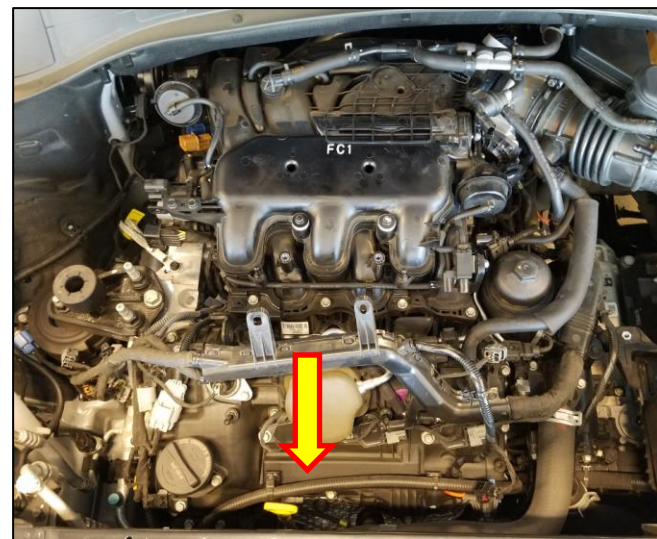
12. Remove the connectors on the passenger side of the intake manifold.



13. Disengage the wire harness cable tie using needle nose pliers, as before.



14. Move the wiring harness away from the intake manifold, towards the front of the vehicle.



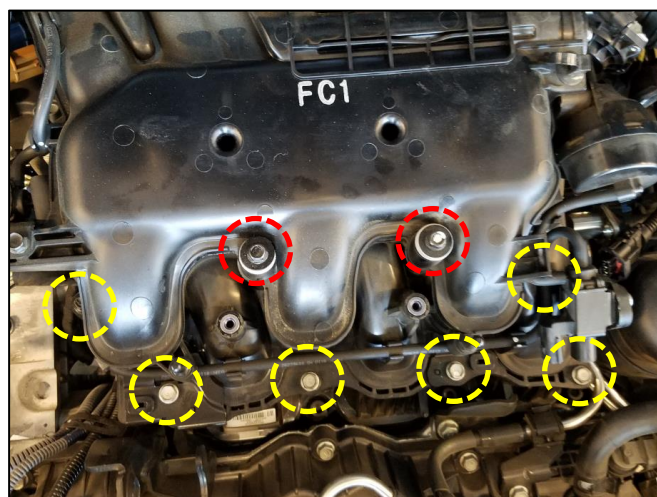
15. Remove the bolts/nuts from the upper intake manifold.

LONG bolts (circled in red)

Tightening torque:
9.8 ~ 10.7 N.m (1.0 ~ 1.1 kgf.m, 7.2 ~7.9 lb-ft)

Short bolts and nuts (circled in yellow)

Tightening torque:
9.8 ~ 11.7 N.m (1.0 ~ 1.2 kgf.m, 7.2 ~ 8.6 lb-ft)



16. Remove the bolt on back of the upper intake manifold, located by the engine bay wall.

Tightening torque:

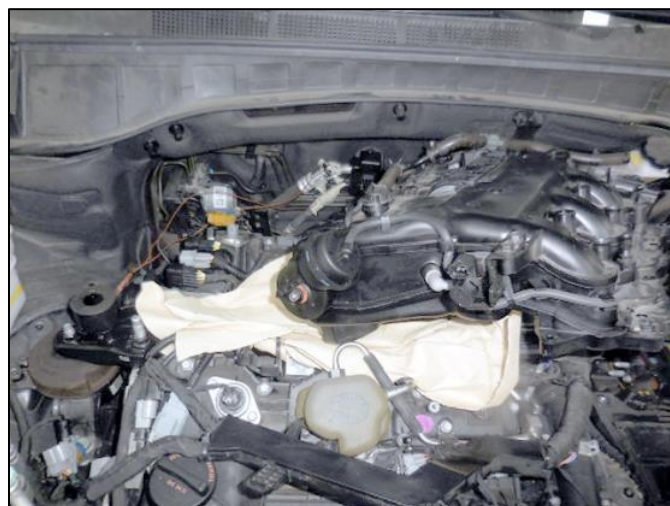
27.4 ~ 31.3 N.m (2.8 ~ 3.2 kgf.m, 20.2 ~ 23.1 lb-ft)



17. Lift the upper intake manifold, and turn it about 30 degrees counter-clockwise.

Set the upper manifold aside, making space to access the HECU.

Place a clean shop towel over the intake ports.



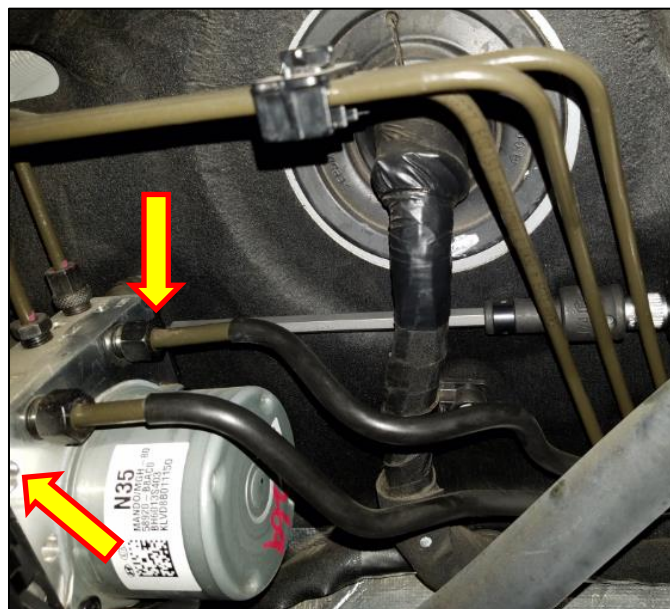
18. Remove the two HECU hex bolts with a long TP15 bit.

Tightening torque:

3.2 ~ 3.8 Nm (0.3 ~ 0.4 kgfm, 2.3 ~ 2.8 lb-ft, 27.6 ~ 33.6 inch-lb)

NOTICE

It may be necessary to slightly push the wire harness leading to the passenger compartment to gain access to the rear bolt.



Upon removal, inspect the bolts for damage:

- If the bolt heads are damaged, replace the HECU continue to step 19.
- If the bolt heads are not damaged, replace the bolts with new ones and reassemble the vehicle in reverse order of removal to complete the service procedure. Use labor operation code **60C117R3**.



NOTICE

If new bolts are needed, use a small inch-lb torque wrench to install and torque the bolts to spec. 27.6 ~ 33.6 inch-lb.

Tightening torque:
 3.2 ~ 3.8 Nm (0.3 ~ 0.4 kgfm, 2.3 ~ 2.8 lb-ft, 27.6 ~ 33.6 inch-lb)



19. Continue from this step only if the HECU hex bolts are damaged.

Remove the mounting bolt for the horn, and set the horn assembly aside out of the way.

Tightening torque:
 9.8 ~ 11.7 N.m (1.0 ~ 1.2 kgf.m, 7.2 ~ 8.6 lb-ft)



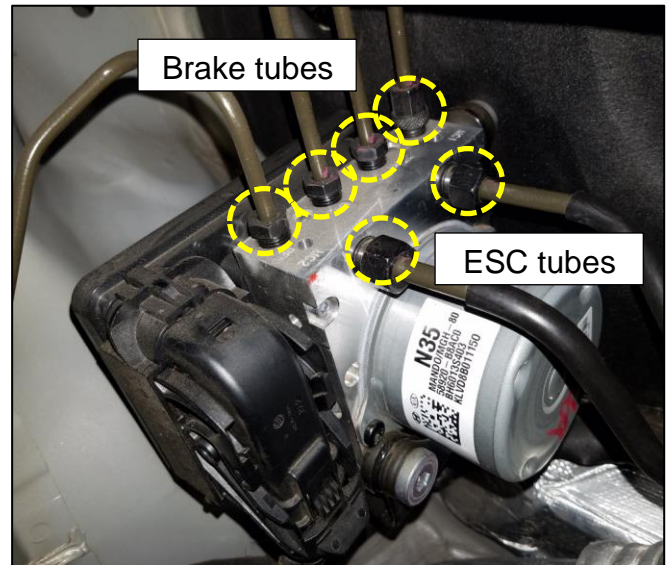
20. Loosen and disconnect the 6 brake lines going to the HECU.

BRAKE TUBE (4) Tightening torque:
 13.7 ~ 16.6 N.m (1.4 ~ 1.7 kgf.m, 10.1 ~ 12.2 lb-ft)

ESC TUBE (2) Tightening torque:
 18.6 ~ 22.5 N.m (1.9 ~ 2.3 kgf.m, 13.7 ~ 16.6 lb-ft)

NOTICE

Clean any spilled brake fluid immediately with a rag and water.

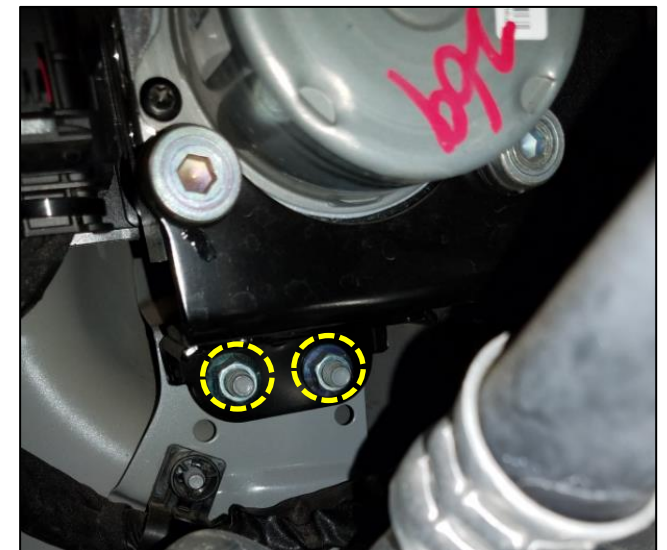


21. Disconnect the HECU connector by pressing the tab inwards, then pulling the release lever.



22. Remove the 2 HECU assembly mounting nuts, and remove the HECU from the vehicle.

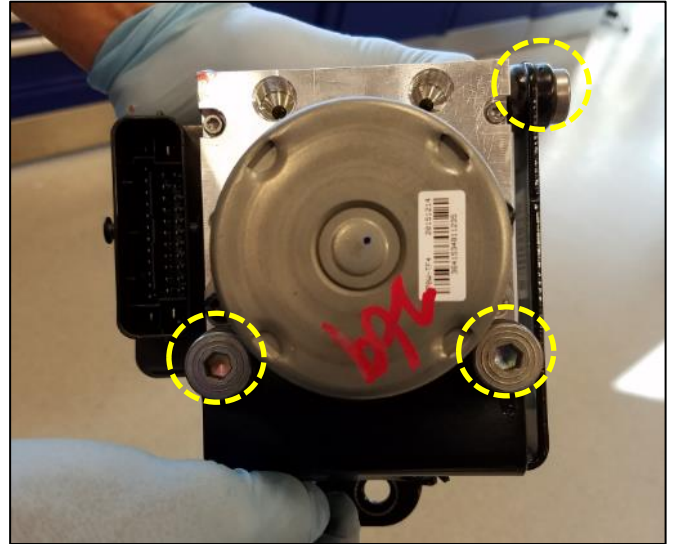
Tightening torque:
 16.7 ~ 25.5 N.m (1.7 ~ 2.6 kgf.m, 12.3 ~ 18.8 lb-ft)



23. Remove the mounting bracket from the HECU, and transfer onto the new HECU.

Tightening torque:

10.8 ~ 13.7 N.m (1.1 ~ 1.4 kgf.m, 8.0 ~ 10.1 lb-ft)



24. Install the new HECU assembly into the vehicle, and install the rest of the removed components in reverse order of removal.
25. Perform the **Brake Bleeding** and the **HECU Calibrations Following HECU Replacement** procedures, starting on page 20. Use labor operation code **60C117R4**.

Service Procedure: Tucson (TL) HECU Bolt Inspection and HECU Replacement

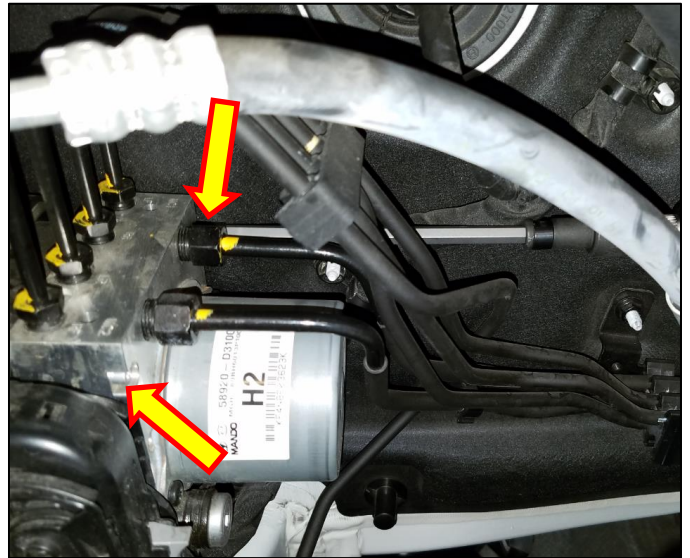
1. Open the hood, and locate the HECU (rear passenger side of the engine compartment).



2. Remove the two HECU hex bolts with a long TP15 bit.

Tightening torque:

**3.2 ~ 3.8 N.m (0.3 ~ 0.4 kgf.m, 2.3 ~ 2.8 lb-ft,
27.6 ~ 33.6 inch-lb)**



3. Upon removal, inspect the bolts for damage:

- If the bolt heads are damaged, replace the HECU continue to step 4.
- If the bolt heads are not damaged, replace the bolts with new ones to complete the service procedure. Use labor operation code **60C117R1**.



NOTICE

If new bolts are needed, use a small inch-lb torque wrench to install and torque the bolts to spec. 27.6 ~ 33.6 inch-lb.

Tightening torque:

3.2 ~ 3.8 Nm (0.3 ~ 0.4 kgfm, 2.3 ~ 2.8 lb-ft, 27.6 ~ 33.6 inch-lb)



4. Continue from this step only if the HECU hex bolts are damaged.

Disconnect the negative (-) battery terminal.

Tightening torque:

3.9 ~ 5.8 N.m (0.4 ~ 0.6 kgf.m, 2.8 ~ 4.3 lb-ft)



5. Loosen the air conditioner tube mounting bolt, located near the washer tank.

Tightening torque:

7.8 ~ 11.7 N.m (0.8 ~ 1.2 kgf. m, 5.7 ~8. 6 lb-ft)



6. Loosen the air conditioner tube mounting bolt, located near the HECU to create some clearance to the HECU.

Tightening torque:

7.8 ~ 11.7 N.m (0.8 ~ 1.2 kgf. m, 5.7 ~8. 6 lb-ft)



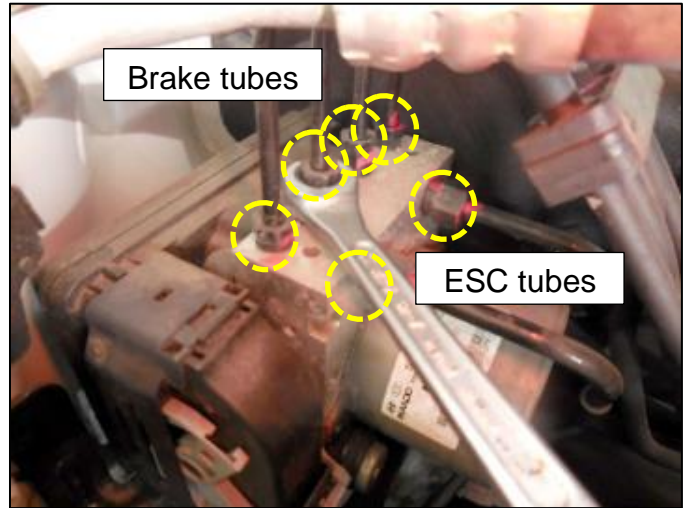
7. Loosen and disconnect the 6 brake lines going to the HECU.

BRAKE TUBE (4) tightening torque:
 13.7 ~ 16.6 N.m (1.4 ~ 1.7 kgf.m, 10.1 ~12.2 lb-ft)

ESC TUBE (2) tightening torque:
 18.6 ~ 22.5 N.m (1.9 ~ 2.3 kgf.m, 13.7 ~16.6 lb-ft)

NOTICE

Clean any spilled brake fluid immediately with a rag and water.



8. Unlock the HECU connector by pulling the tab upwards, then pulling the release lever.



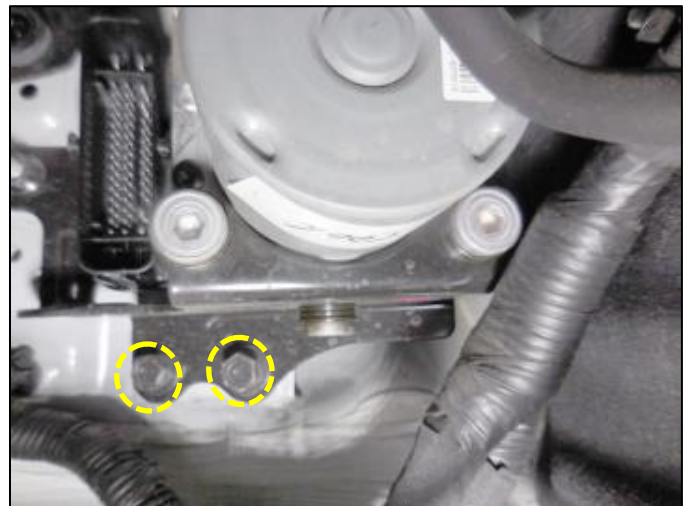
9. Remove the HECU mounting nut.

Tightening torque:
 19.6 ~ 29.4 N.m (2.0 ~ 3.0 kgf.m, 14.4 ~ 21.6 lb-ft)



10. Remove the HECU mounting bolts.

Tightening torque:
 19.6 ~ 29.4 N.m (2.0 ~ 3.0 kgf.m, 14.4 ~ 21.6 lb-ft)



11. Remove the HECU from the vehicle.



12. Loosen the HECU bracket mounting bolts.

Tightening torque:

10.7 ~ 13.7 N.m (1.1 ~ 1.4 kgf.m, 7.9 ~ 10.1 lb-ft)



13. Install the existing bracket to new HECU.

Tightening torque:

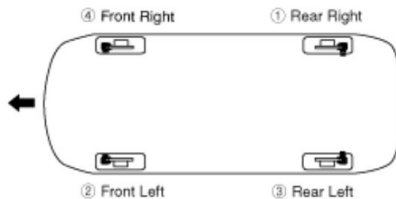
10.7 ~ 13.7 N.m (1.1 ~ 1.4 kgf.m, 7.9 ~ 10.1 lb-ft)



14. Install the new HECU assembly into the vehicle, and install the rest of the removed components in reverse order of removal.
15. Perform the **Brake Bleeding** and the **HECU Calibrations Following HECU Replacement** procedures, starting on page 20. Use labor operation code **60C117R2**.

Service Procedure: Brake Bleeding Procedure – All Models

1.
 1. Lift the vehicle to bleed the brakes
 2. Start at the right rear caliper
 3. Remove the rubber bleeder cap
 4. Attach a bleed line, and bleed out all of the air.
 5. Move to the left front caliper and bleed out all of the air.
 6. Move to the left rear caliper and bleed out all of the air.
 7. Move to the right front caliper and bleed out all of the air.

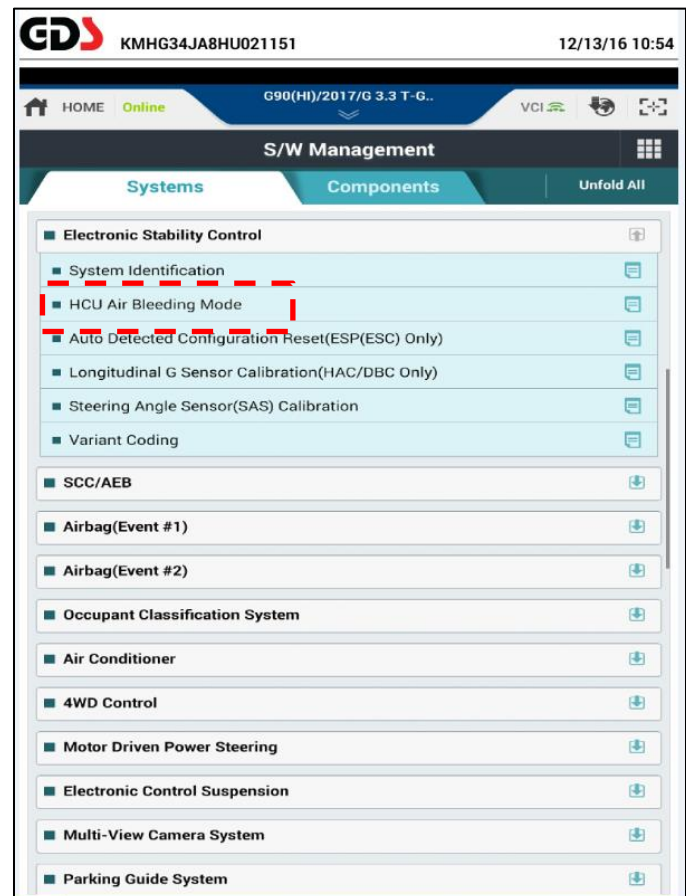


NOTICE

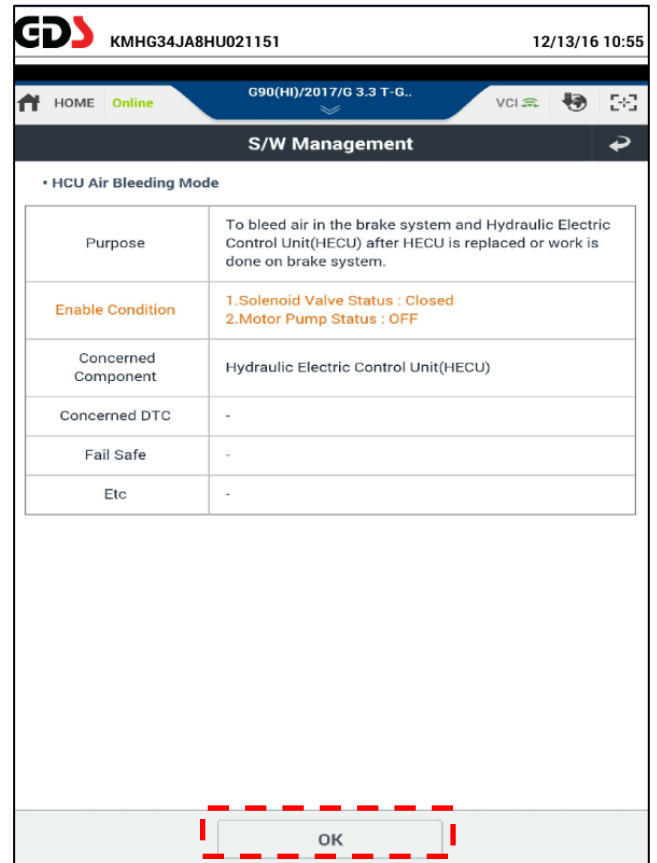
Always keep the brake fluid reservoir topped off. Do not let the level drop below the MIN line.

2. Connect a GDS (or G-Scan) tool to the vehicle to perform the **HCU Air Bleeding Mode**.

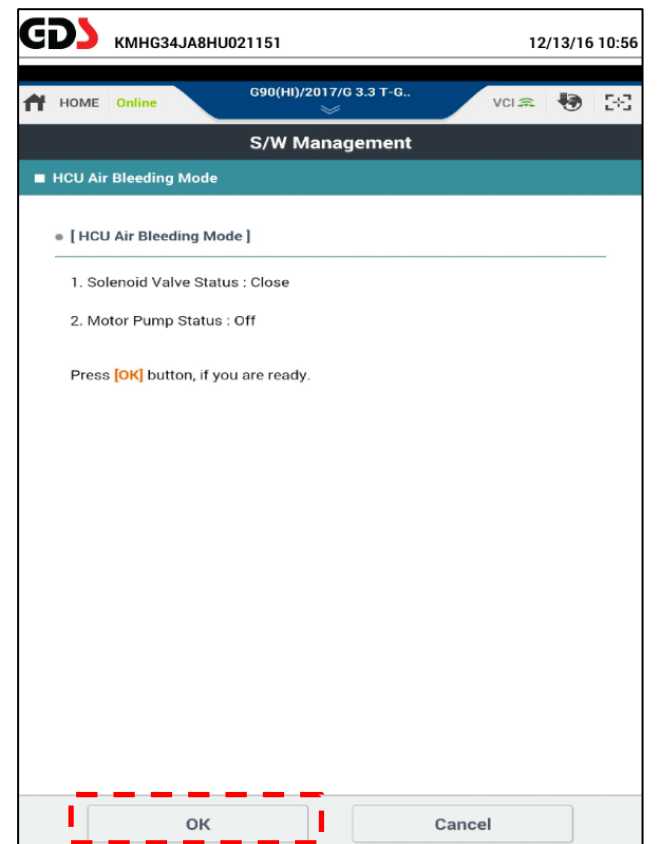
From the **S/W Management** screen, select **HCU Air Bleeding Mode**.



3. Read the summary screen and then select **OK**.



4. Select **OK** when ready to begin.

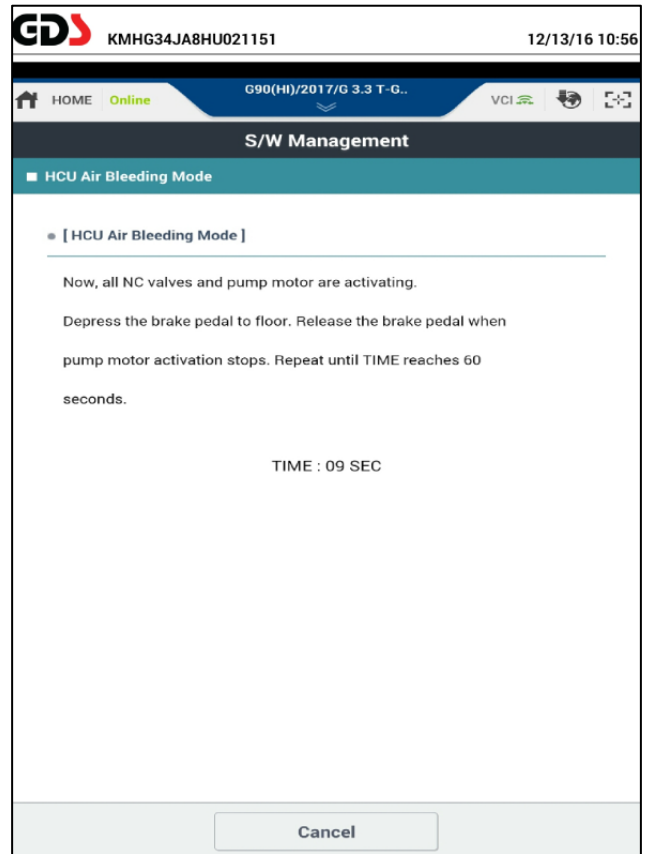


5. The HECU motor will begin operating.

When the motor is operating, press and hold the brake pedal.

When the motor stops operating, release the brake pedal.

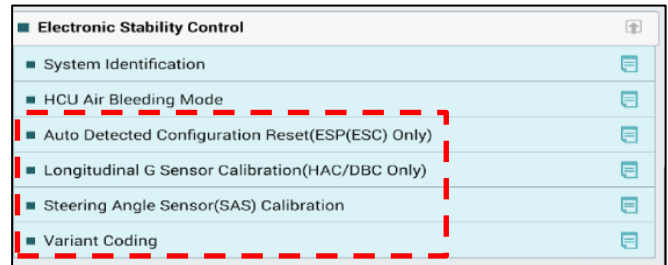
Continue this procedure for 60 seconds until the process is complete.



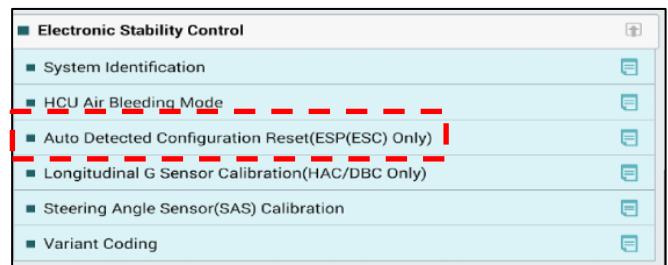
6. After the **HCU Air Bleeding Mode** is complete, perform step 1 of the service brakes bleeding procedure again.

Service Procedure: HECU Calibrations Following HECU Replacement – All Models

1. After HECU replacement and brake bleeding has been completed, there are four calibrations that must be done using a GDS tool.
 - 1) Auto Detected Configuration
 - 2) Longitudinal G Sensor Calibration
 - 3) Steering Angle Sensor Calibration
 - 4) Variant Coding



2. Start with Auto Detected Configuration.



3. Read the summary description and click **OK** to continue.

• Auto Detected Configuration Reset(ESP(ESC) Only)	
Purpose	To reset the configuration such as engine and transmission type, EPB, 4WD and others that set to HECU during vehicle assembly and allow PCM/ECM to re-configure.
Enable Condition	1. Engine Off 2. Ignition Switch On 3. Other Modules properly secured
Concerned Component	Hydraulic Electric Control Unit(HECU)
Concerned DTC	C1702
Fail Safe	Warning Lamp On
Etc	Perform this function when DTC C1702 and ABS/EBD/VDC warning indicator lamp is present or HECU is installed on to another same vehicle with different options.

OK

4. Read the conditions, and select **Reset** to continue.

■ Auto Detected Configuration Reset(ESP(ESC) Only)

• [Auto Detected Configuration Reset]

The automatically detected variant code into HECU from assembly factory like engine type,transmission type,EPB,4WD may be initialized by this function.

Perform this function when you replace HECU with other vehicle's one or occur C1702 with MIL On. (ABS/EBD/ESP)

=[Condition]

1. Before resetting the Variant Code, please check all the controller has set up properly
2. Ignition key ON & Engine Stop

Press [**RESET**] button, if you are ready

Press [**CANCEL**] button to exit.

Reset **Cancel**

5. Select **OK** to confirm reset completion.

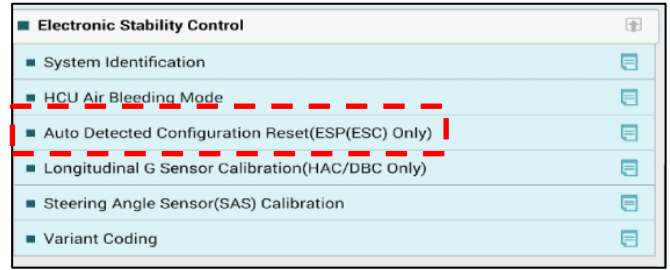
Information

It has been completed !!!

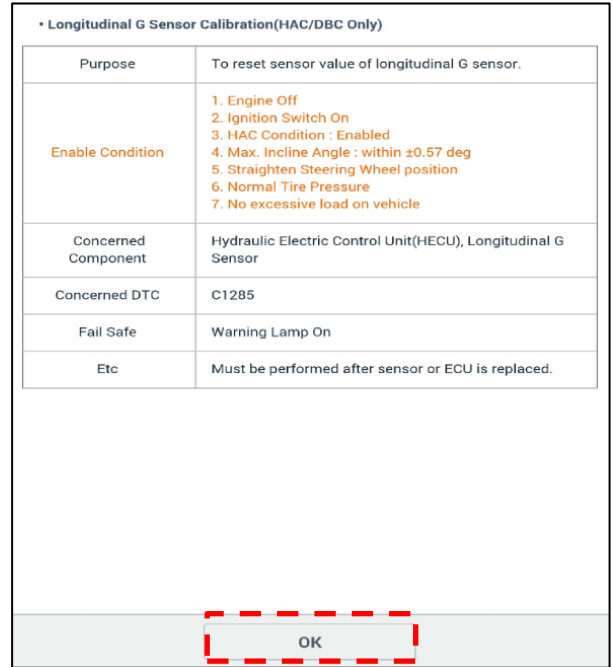
Press [**OK**] button.

OK

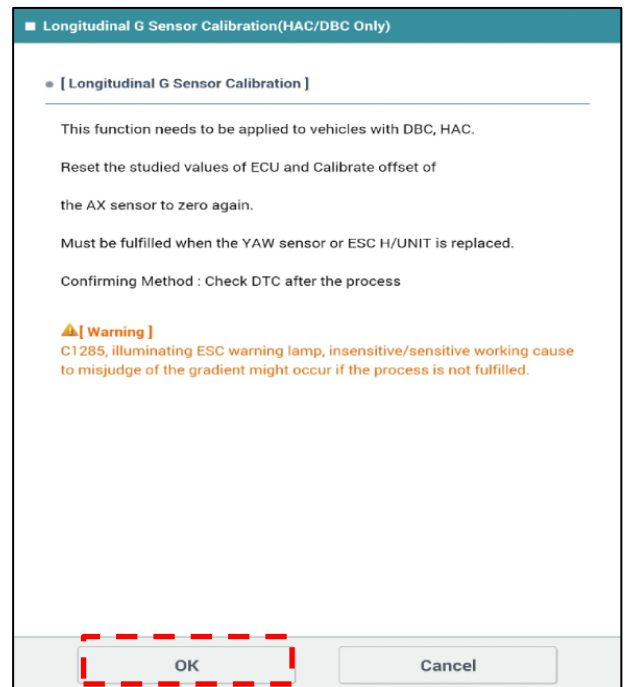
6. Select Longitudinal G Sensor Calibration..



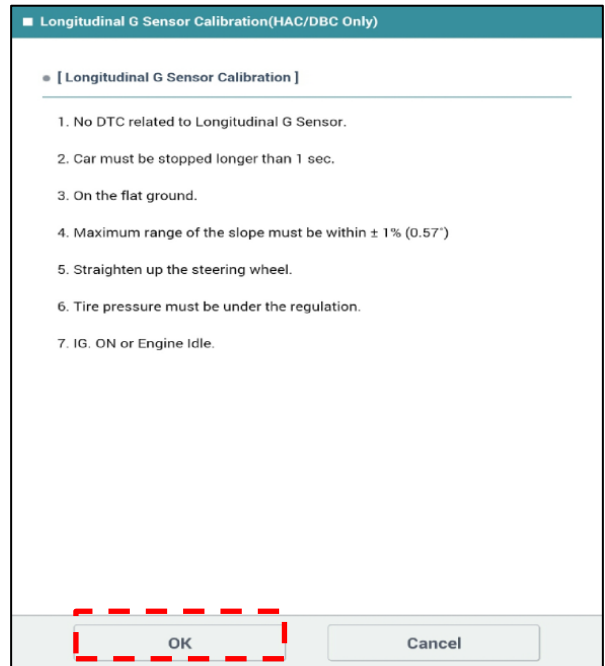
7. Read the summary description and click **OK** to continue.



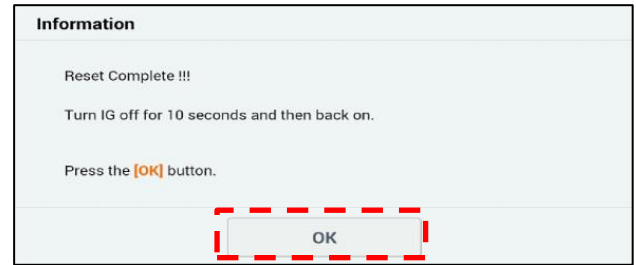
8. Continue reading the summary description and click **OK** to continue.



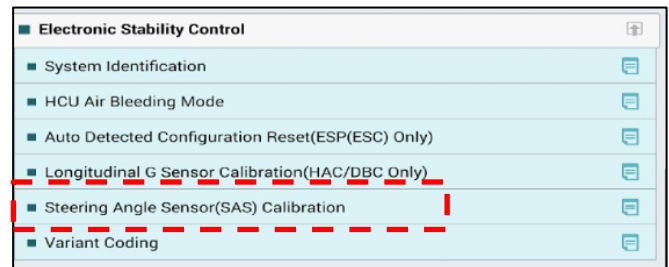
9. Read the conditions, and select **OK** to continue.



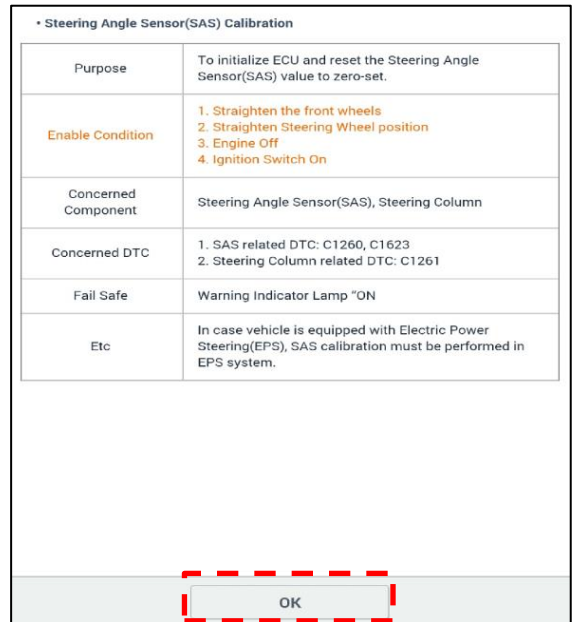
10. Turn the ignition OFF for 10 seconds, then back ON again.
Select **OK** to continue.



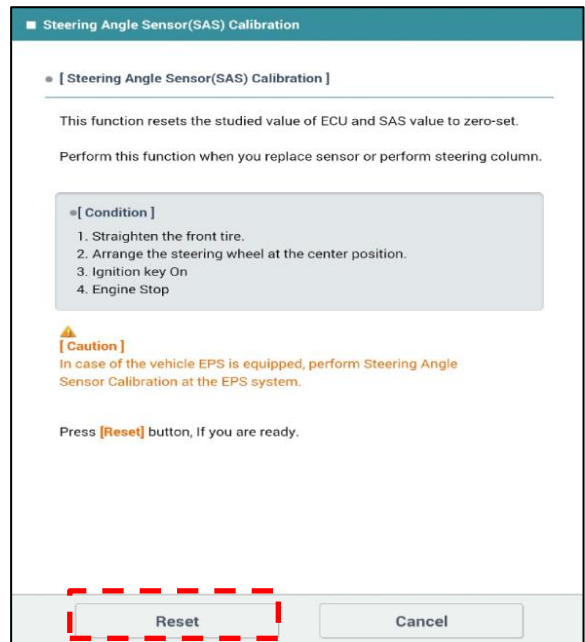
11. Select Steering Angle Sensor (SAS) Calibration.



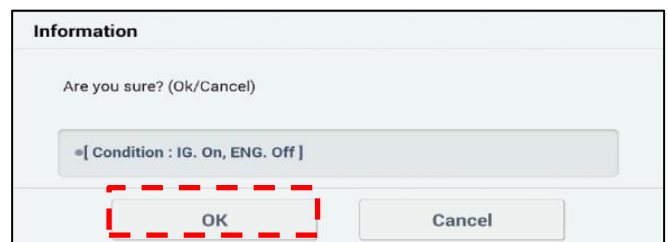
12. Read the summary description and click **OK** to continue.



13. Read the conditions, and select **Reset** to continue.

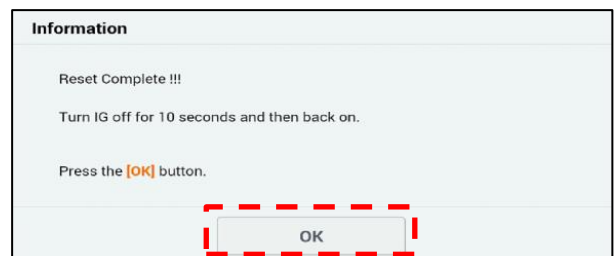


14. With the ignition ON, engine not running, select **OK**.

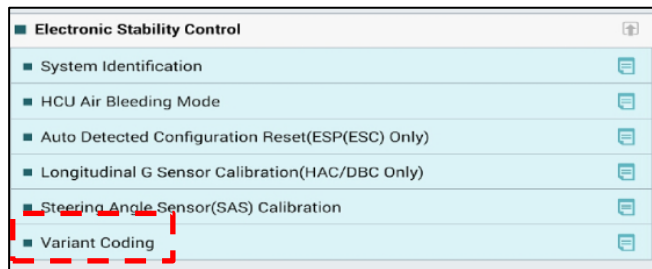


15. Turn the ignition OFF for 10 seconds, then back ON again.

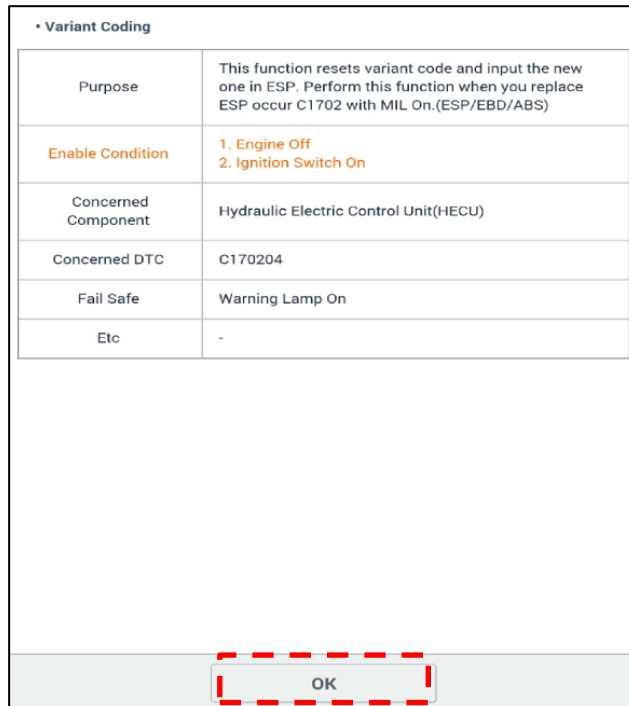
Select **OK** to continue.



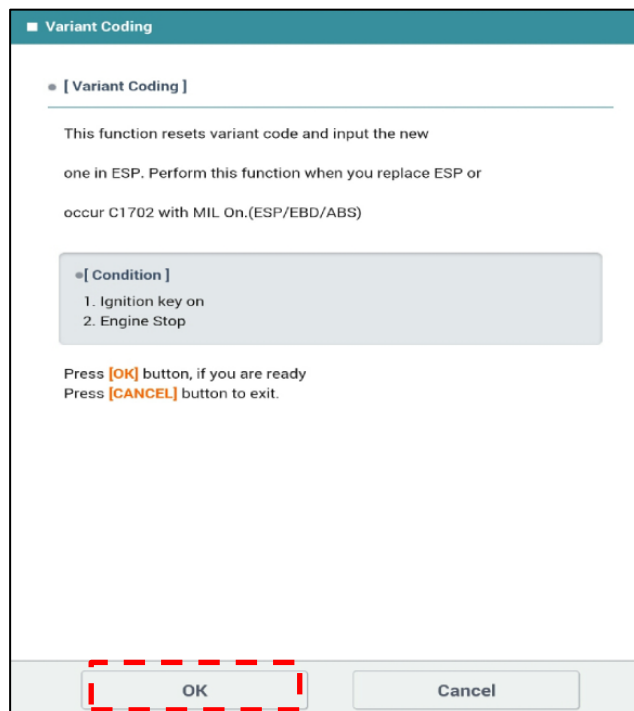
16. Select Variant Coding.



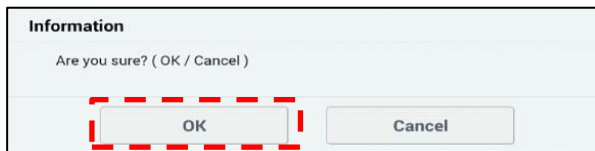
17. Read the summary description and click **OK** to continue.



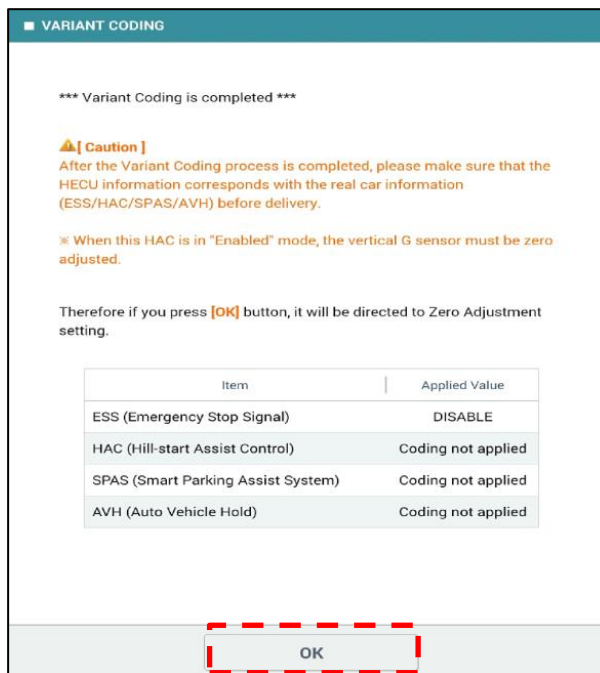
18. Read the conditions, and select **OK** to continue.



19. Select **OK** to continue.



20. Select **OK** to complete calibration procedures.



21. Start engine to confirm normal operation.

Check and clear any DTCs. Verify no warning lamps on in the instrument cluster.