HYUNDAI NEW THINKING. NEW POSSIBILITIES. **Technical Service Bulletin**	GROUP **BRAKES**	NUMBER **16-BR-001**
	DATE **FEBRUARY 2016**	MODEL(S) **Sonata HEV (LF) Sonata PHEV (LF)**

SUBJECT: SONATA (LF) HEV AND PHEV BRAKE BLEEDING PROCEDURE

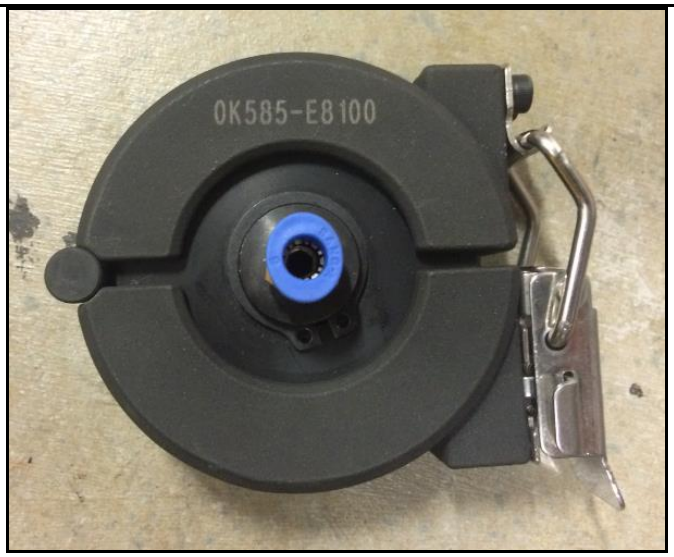
Description: This bulletin describes the procedure to properly bleed the brakes on a Sonata Hybrid (LF HEV) and Plug-In Hybrid (LF PHEV) vehicles. This procedure applies when any air is introduced into the Active Hydraulic Boost (AHB) system, which consists of the pressure supply unit (PSU), and the integrated brake actuation unit (IBAU). Improper bleeding of the brake system can result in the presence of air, which may reduce braking effectiveness.

Applicable Vehicles: All Sonata Hybrid (LF HEV) and Plug-In Hybrid (LF PHEV) vehicles.

SST Information

Description	Picture
Active Hydraulic Boost (AHB) Brake Air Bleeding Tool	 Part Number: 09580-3D100

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

Active Hydraulic Boost (AHB) Brake Air Bleeding Tool Adapter	 Part Number: 0K585-E8100

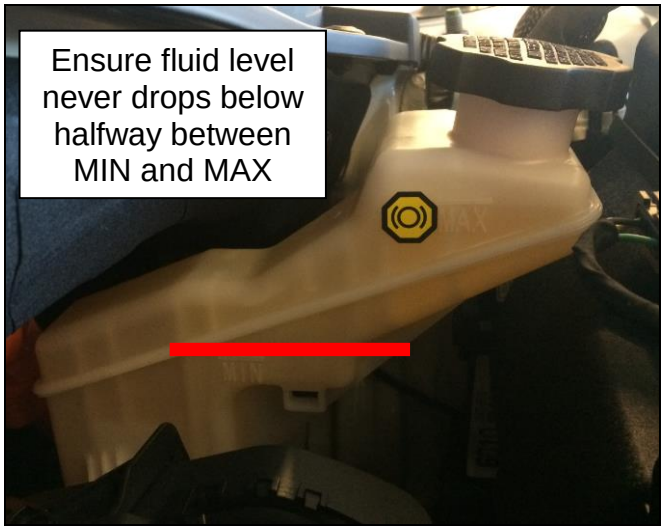
Warranty Information:

Model	Op Code	Operation	Op Time	Causal Part #	Nature Code	Cause Code
LF HEV / LF PHEV	58700A00	BRAKE FLUID REPLACEMENT OR AIR BLEED-ADJUSTMENT	0.4	58500-E6030	N32	C26
	58700AH1	ADDITIONAL TIME FOR HYBRID BRAKE BLEEDING	1.1			

Service Procedure:
Step 1: AHB System Bleeding (IBAU ECU OFF) – *Pages 2-6*
Step 2: AHB System Bleeding (IBAU ECU ON) – *Pages 6-7*
Step 3: GDS Fluid Circulation Mode: PC-GDS – *Pages 7-9*; Tablet-GDS – *Pages 9-12*
Step 4: GDS Pedal Travel Sensor Calibration: PC-GDS – *Pages 12-13*; Tablet-GDS – *Pages 13-15*

Service Procedure Step 1: AHB System Bleeding (IBAU ECU OFF)

1. **Ensure brake fluid reservoir level never drops below the halfway point between MIN and MAX.** If the level drops below this point, there is a risk of air being introduced into the system, and the bleeding procedure must be started over.



✶ NOTE

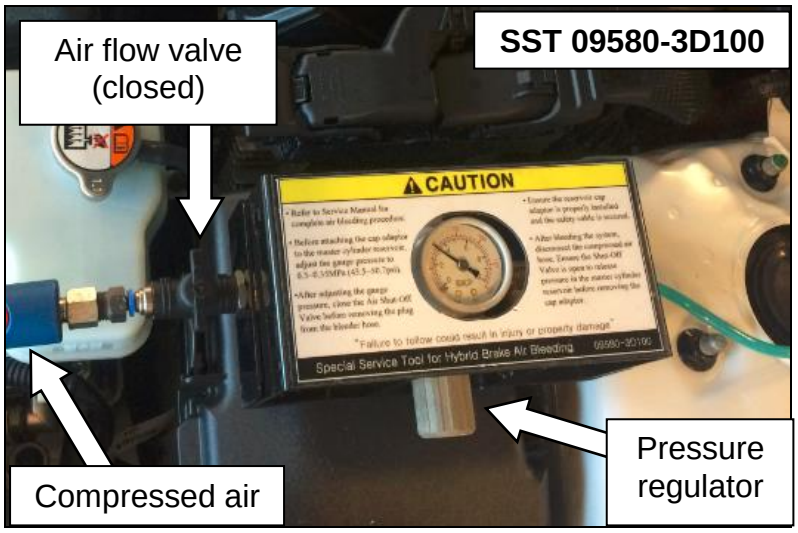
Use DOT 3 or DOT 4 brake fluid.

2. Disconnect negative battery terminal.

✶ NOTE

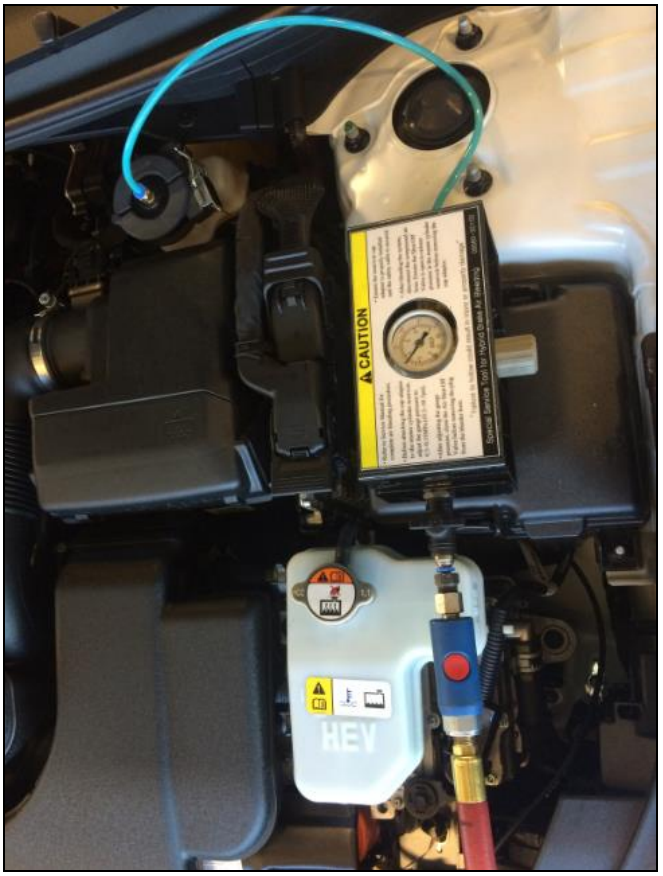
Tightening torque: 4.0~6.0N.m (0.4~0.6kgf.m, 3.0~4.4lb-ft)

3. With the air flow valve closed (as shown in image below), connect pressurized brake bleeder tool (09580-3D100) to the brake fluid reservoir using the adapter (0K585-E8100).



4. With the air flow valve closed, connect a compressed air source. Regulate the air pressure to 50 psi. Open the air flow valve to pressurize the brake system.

After the system is pressurized, inspect the integrated brake actuation unit (IBAU) and pressure source unit (PSU) fittings for leaks. Repair any leaks found before continuing with bleeding procedure.



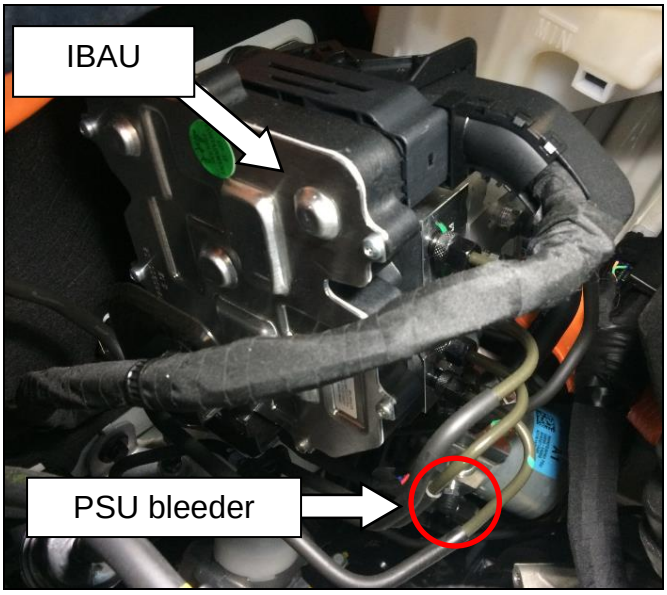
✶ NOTE

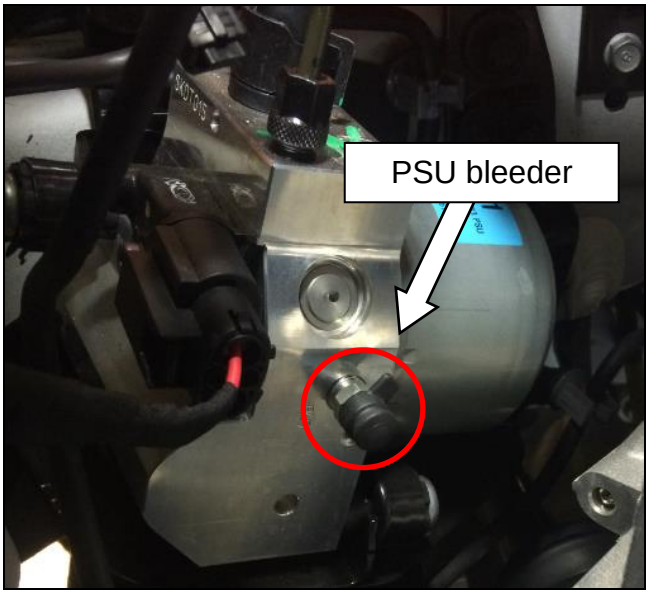
Always keep the air flow valve closed when connecting to a compressed air source. Open the valve as the last step.

When removing pressure from the system, close the valve first before removing the compressed air source.

5. With the brake system pressurized, begin the bleeding procedure starting at the bleeder located at the PSU.

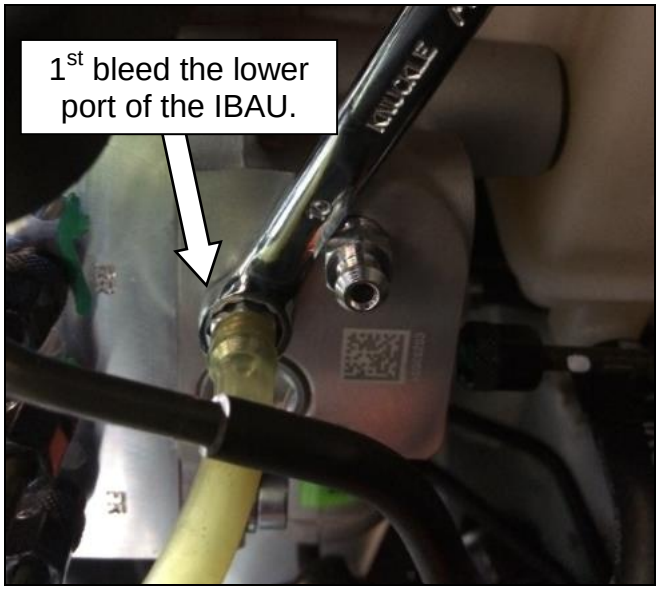
Bleed the fitting until no air bubbles appear in the fluid.

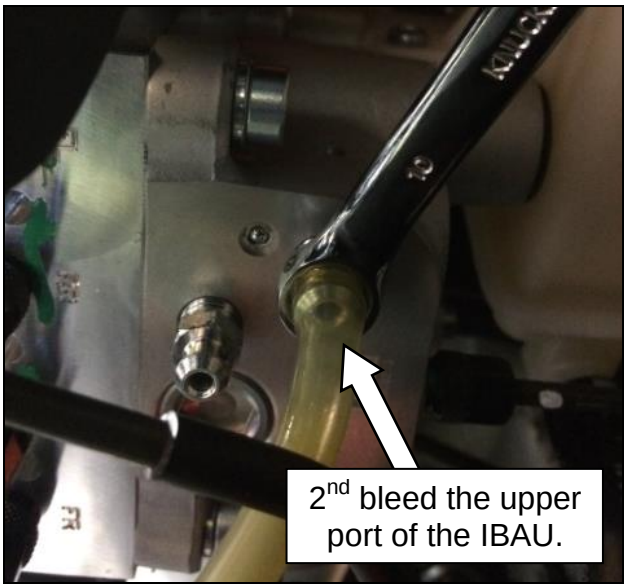




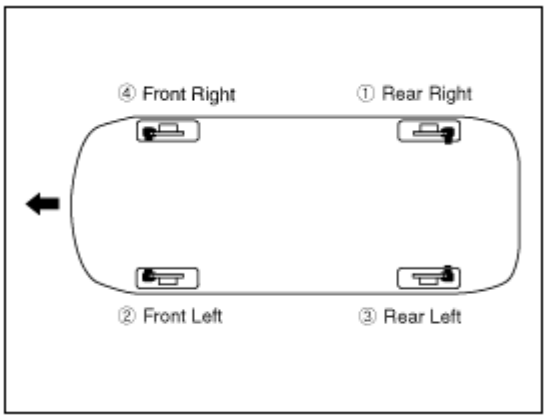
6. After bleeding the PSU, move to the IBAU.

   1. Start bleeding at the LOWER port. Bleed until no air appears in the fluid.
   2. Then, move onto the UPPER port. Bleed until no air appears in the fluid.



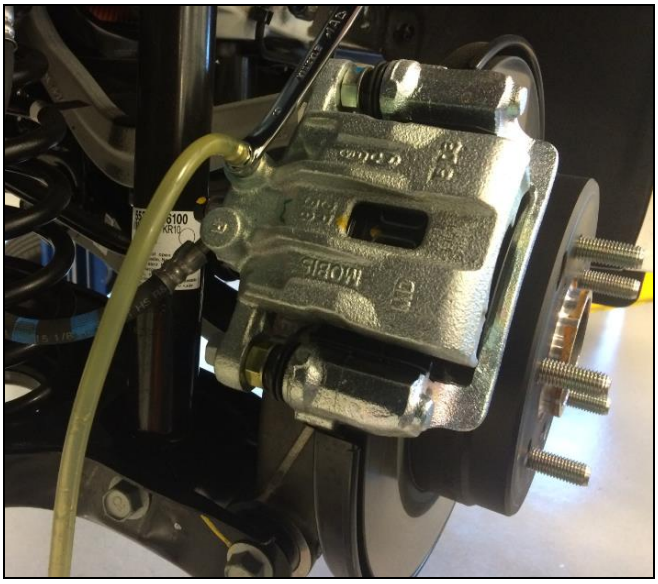


7. Starting at the rear right wheel, attach a clear hose to the brake bleeding nipple. The other side of the hose should be immersed in a bottle partially filled with clean brake fluid.



While pressurized with compressed air, bleed the brakes at each wheel in the correct sequence:
1. Rear Right
2. Front Left
3. Rear Left
4. Front Right

<u>Do not pump the brake pedal during this procedure</u>.
Use only air pressure to bleed. Repeat this sequence until no air bubbles appear in the fluid.
<u>Remember to maintain proper brake fluid level in the reservoir at all times.</u>



✶ NOTE

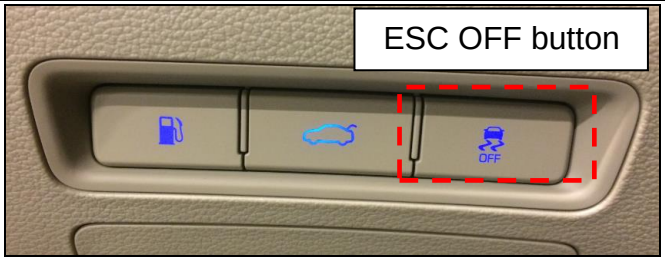
Bleeder screw tightening torque: 6.9~12.7 N.m (0.7~1.3 kgf.m, 5.1~9.4 lb-ft)

8. Perform a second cycle of bleeding, this time with an assistant pressing on the brake pedal (and the SST still applying air pressure), as follows:

1. Starting at the IBAU lower port, depress the brake pedal five times and hold. Open the bleeder to bleed out any remaining air in the system. Close the bleeder before removing brake pedal pressure.
2. Repeat the above procedure 10 times.
3. Move onto the upper port, and bleed 10 times in the same fashion (applying brake pedal pressure).
4. After completing the IBAU bleeding, move to the calipers. Start at the right rear caliper, and bleed 10 times in the same fashion (applying brake pedal pressure).
5. Repeat this for the rest of the calipers in the order previously described.
6. Remove the SST and top off the brake fluid reservoir.

Service Procedure Step 2: AHB System Bleeding (IBAU ECU ON)

9. Reconnect the cable to the negative battery terminal. Enable the IBAU ECU Air Bleeding Mode according to the following:



1. Turn the ignition ON.
2. Press and hold the ESC OFF button. Wait for the "***Traction & Stability Control disabled***" message to be displayed, and continue holding the ESC OFF button.
3. While still holding the ESC OFF button, depress and release the brake pedal from rest position to fully applied (40mm or more) 10 times.
4. Release the ESC OFF button.
5. Turn the vehicle ignition OFF.
6. Turn the vehicle ignition back ON.
7. Press and hold the ESC OFF button until "***Traction & Stability Control disabled***" is displayed.

IBAU ECU Air Bleeding Mode is established when the ABS and ((!)) lamps are illuminated.

8. The IBAU ECU Air Bleeding Mode should now be enabled. Verify by observing that the ABS and ((!)) lamps are illuminated on the gauge cluster.

★ NOTES

The IBAU Air Bleeding Mode can only be enabled under the following conditions:

- **The hood must be closed.**
- The procedure to enter bleeding mode must be completed within 30 seconds.

10. With the IBAU Air Bleeding Mode enabled, perform the following:

1. Connect the SST and apply air pressure, as previously described.
2. Have an assistant press the brake pedal about half the stroke and hold.
3. Starting at the right rear caliper, open the bleeder screw to bleed the line.
4. Close the bleeder screw, then release the brake pedal.
5. Repeat steps 2 through 4 ten times.
6. Move onto the next calipers in the correct bleeding order, and repeat the same procedure until all four calipers have been bled.
7. Remove the SST, top off the brake fluid, and replace the reservoir cap.
8. Cycle the ignition OFF, then ON again to disable the IBAU ECU Air Bleeding Mode.

Service Procedure Step 3: GDS Fluid Circulation Mode

★ IMPORTANT

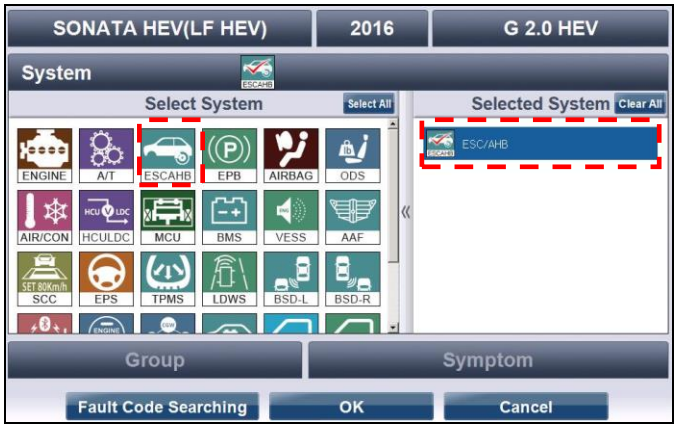
Before attempting to perform the Fluid Circulation Mode, ensure that the auxiliary battery is fully charged (higher than 12V). If the battery is not fully charged, connect it to a charger as needed.

11a. Connect a PC-based GDS to the vehicle as per TSB 15-GI-002.

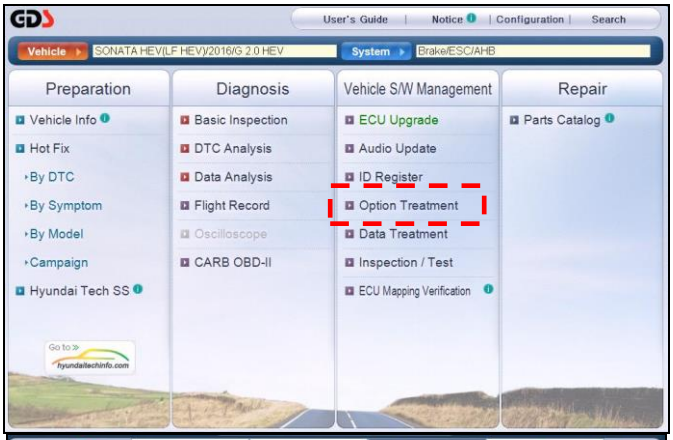
Perform the Fluid Circulation Mode, as follows:

For PC-Based GDS:

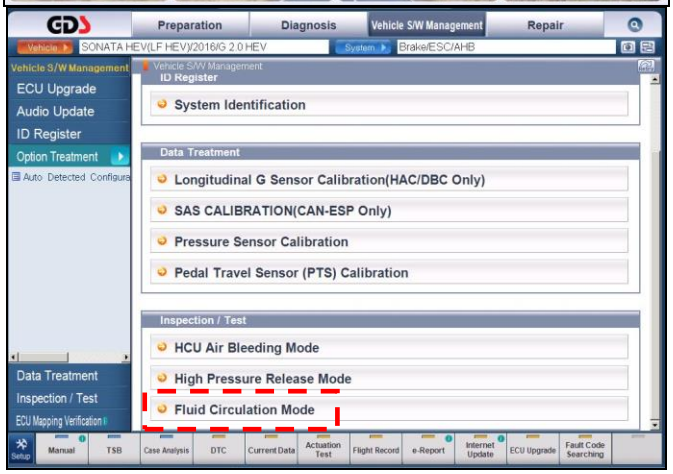
1. Select ESC/AHB system.



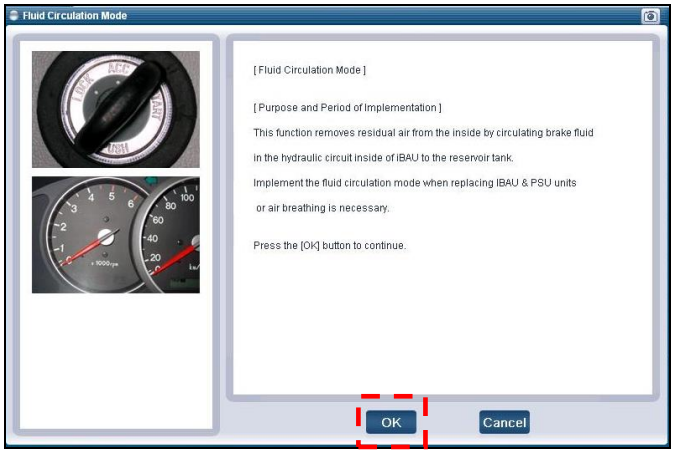
2. Select Option Treatment



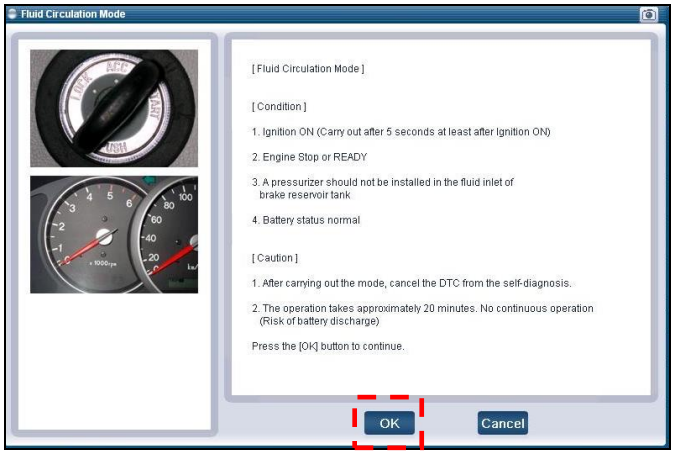
3. Select Fluid Circulation Mode



4. Read the description and click OK to continue.

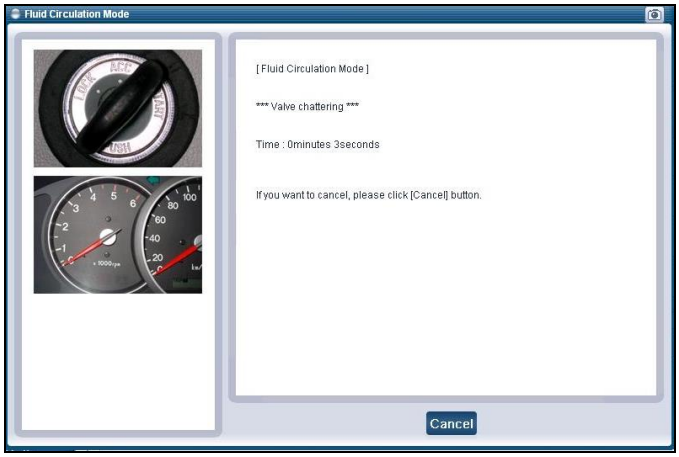


5. With the ignition on, engine off, and a fully charged battery, click OK to begin the ~20 minute circulation process.



6. The fluid circulation process will begin. Chattering and clunking noises are normal. The process lasts about 20 minutes. Click OK when finished.

7. Check and clear any DTC(s).



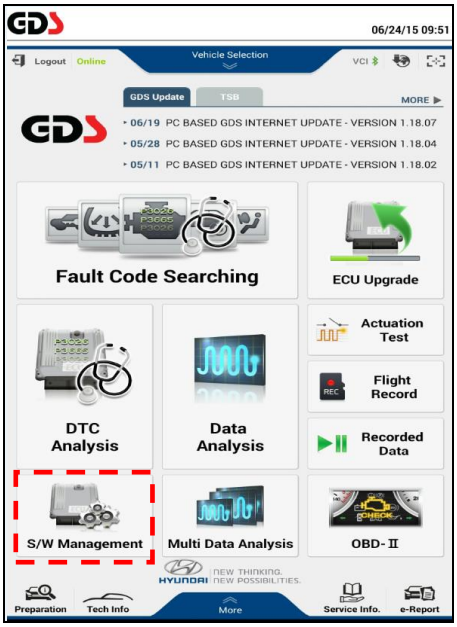
11b. Connect a tablet-based GDS to the vehicle as per TSB 15-GI-001. Connect the VCI to the tablet using the USB cable.

Perform the Fluid Circulation Mode, as follows:

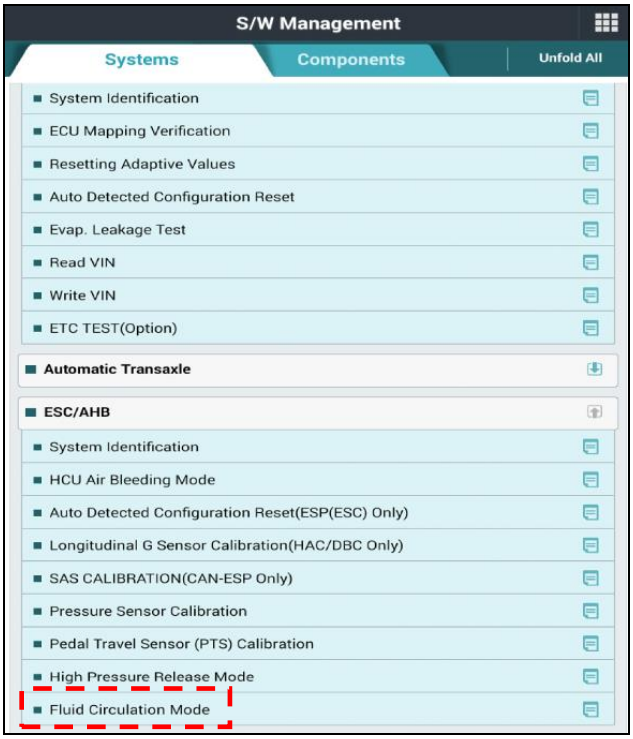
For Tablet-Based GDS Mobile:

1. Select ESCAHB system.

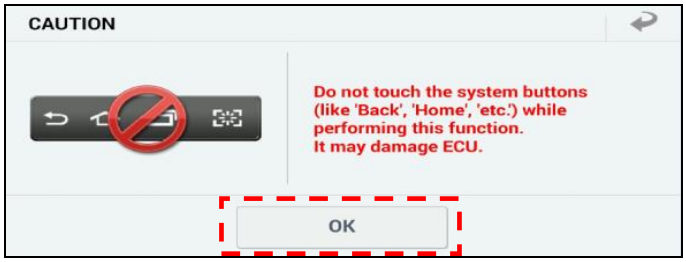
2. Select S/W Management



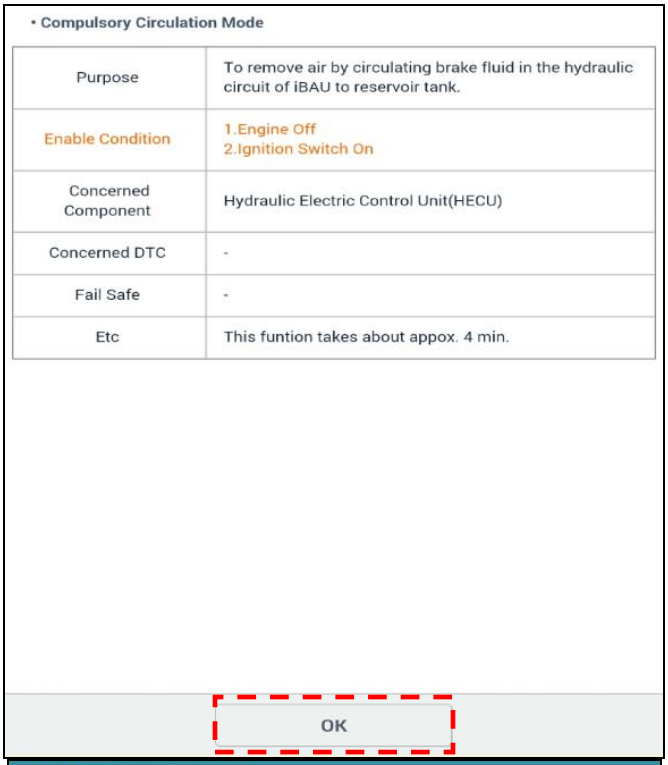
3. Select Fluid Circulation Mode



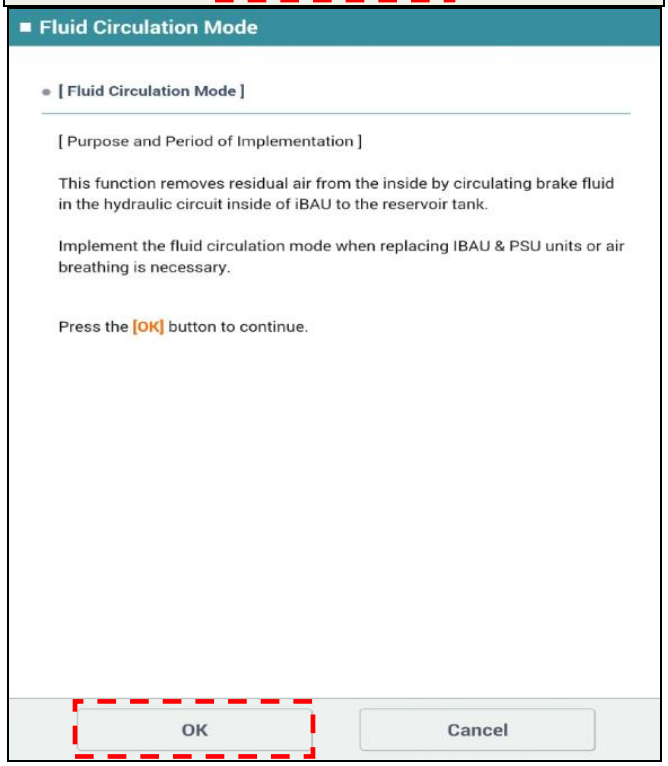
4. Read the caution statement and click OK to continue.



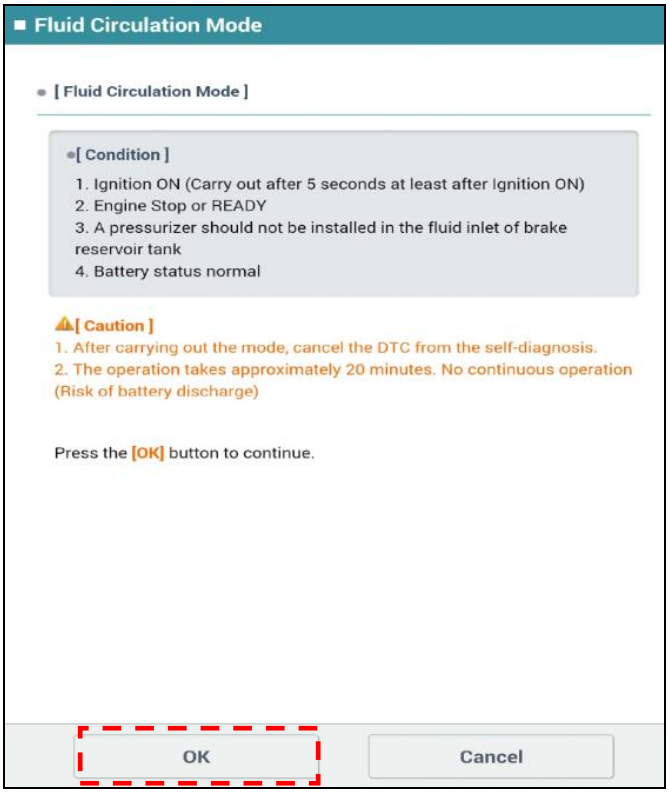
5. Read the summary of the process and click OK to continue.



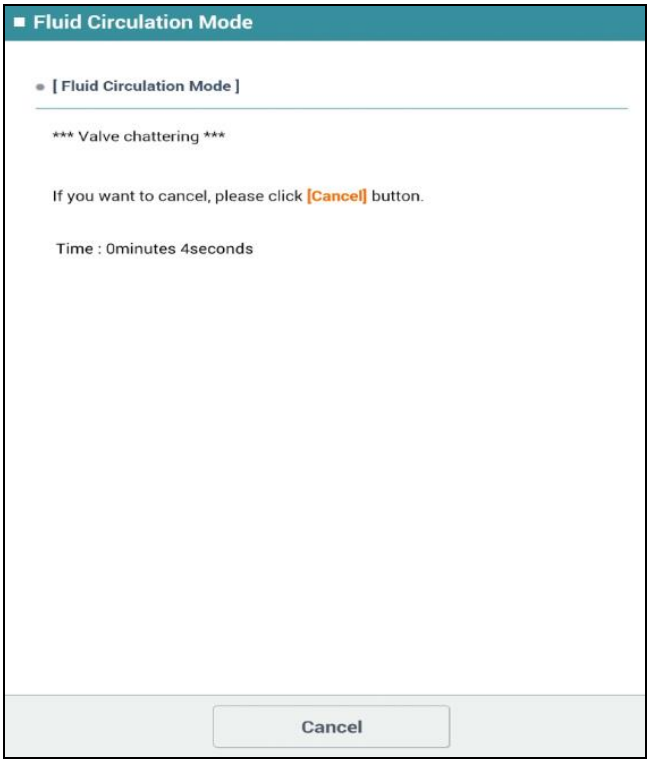
6. Read the description of the process and click OK to continue.



7. Read the conditions and cautions, then click OK to continue.



8. The fluid circulation process will begin. Chattering and clunking noises are normal. The process lasts about 20 minutes. Click OK when finished.



9. Check and clear any DTC(s).

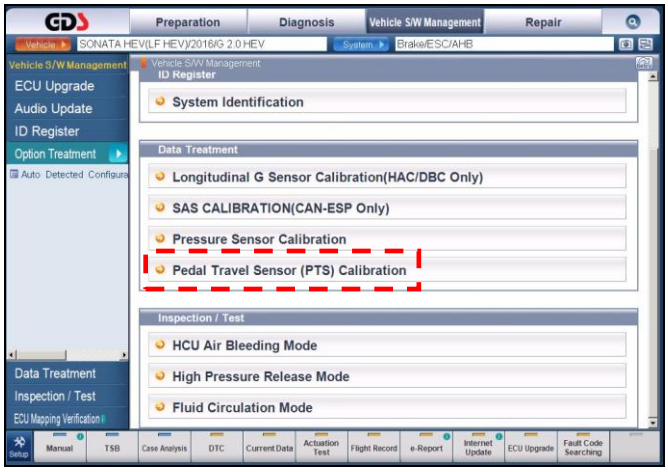
Service Procedure Step 4: GDS Pedal Travel Sensor Calibration

12a. Connect a PC-based GDS to the vehicle as per TSB 15-GI-002.

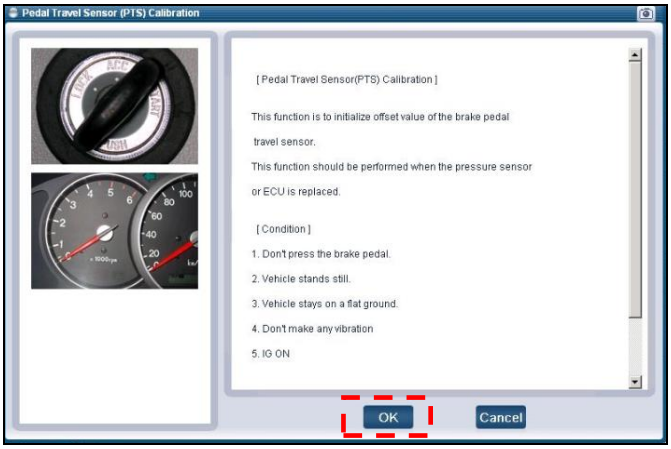
Perform the Pedal Travel Sensor Calibration as follows:

For PC-Based GDS:

1. From the Option Treatment screen, select Pedal Travel Sensor (PTS) Calibration.



2. Read the description, and click OK to begin.



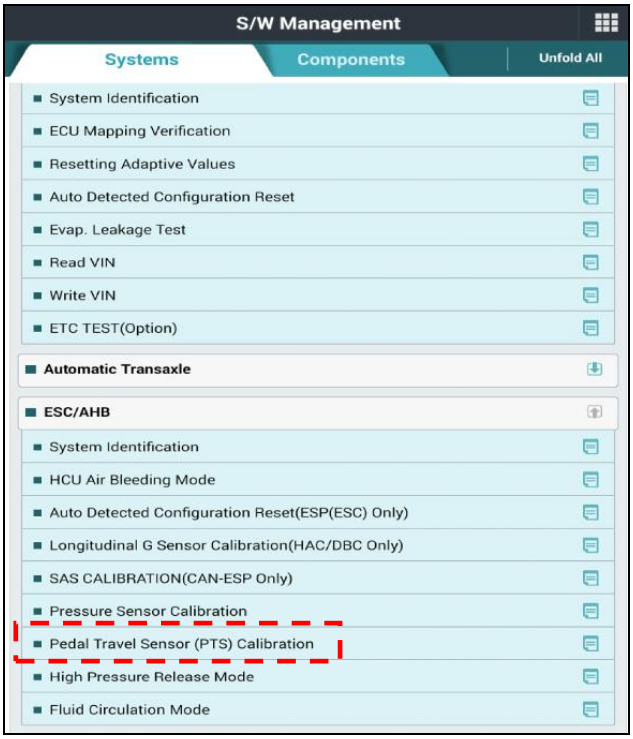
3. Upon completion, turn the ignition OFF for 10 seconds, and then back ON. Click OK to complete the PTS calibration.

12b. Connect a tablet-based GDS to the vehicle as per TSB 15-GI-001. Connect the VCI to the tablet using the USB cable.

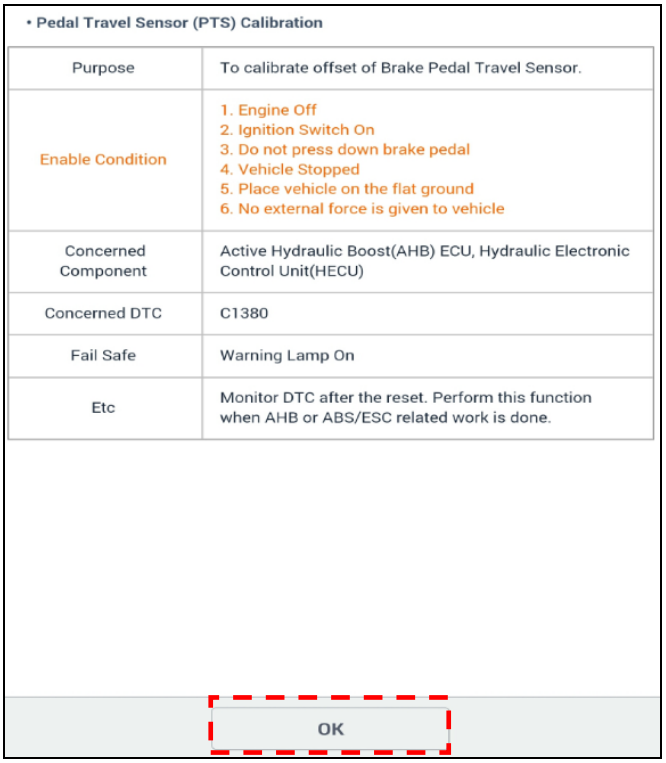
Perform the Pedal Travel Sensor (PTS) Calibration as follows:

For Tablet-Based GDS Mobile:

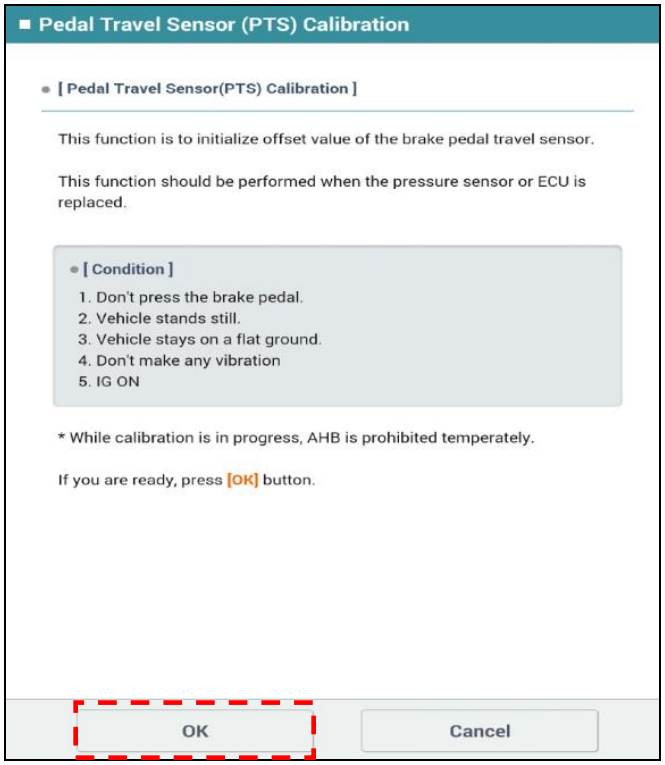
1. From the S/W Management screen, select Pedal Travel Sensor (PTS) Calibration.



2. Read the summary of the process and click OK to continue.



3. Read the description of the process and click OK to continue.



4. Turn the ignition OFF for 10 seconds, then ON again. Click OK to complete the PTS calibration.