

Brake Squawk/Knock Noise

Service Category Brake

Section Brake Control/Dynamic Control System

Market USA

Toyota Supports
ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2016 - 2021	RX450H	

SUPERSESION NOTICE

The information contained in this bulletin supersedes Service Bulletins L-SB-0004-19 and L-SB-0005-21.

Service Bulletins L-SB-0004-19 and L-SB-0005-21 are obsolete, and any printed versions should be discarded.

Introduction

Some 2016 – 2021 model year RX 450h vehicles may exhibit a squawk/knock noise from the engine compartment when depressing and/or releasing the brake pedal. This may be due to small amounts of air within the brake actuator assembly. Follow the Repair Procedure in this bulletin to address this condition.

Warranty Information

OP CODE	Model Year	DESCRIPTION	TIME	OFF	T1	T2
BR1919	2016 – 2021	Brake Actuator Replacement & Brake Bleed	3.8	44050-48320	91	99
Combo A	2016 – 2017	Reprogram ECU	0.3			
Combo B	2016 – 2018	R & R Master Cylinder Reservoir	1.2			

APPLICABLE WARRANTY

- This repair is covered under the Lexus Basic Warranty. This warranty is in effect for 48 months or 50,000 miles, whichever occurs first, from the vehicle's in-service date.
- Warranty application is limited to occurrence of the specified condition described in this bulletin.

Brake Squawk/Knock Noise

Parts Information

PART NUMBER		PART NAME	QTY
PREVIOUS	NEW		
47220-48270	47220-48271	Reservoir Assembly, Master Cylinder	1
44050-48320		Actuator Assy, Brake	1
895B0-48030 895B0-48031		Computer Assy, Skid Control ECU	–
00475-1BF03		Brake Fluid	5 – 10
00451-00001-LBL		Authorized Modifications Label	1

NOTE

- The ECU should NOT be replaced as part of the Repair Procedure.
- Authorized Modifications Labels may be ordered in packages of 25 from the Materials Distribution Center (MDC) through *Dealer Daily – Parts – Dealer Support Materials Orders*.

Required Tools & Equipment

REQUIRED EQUIPMENT	SUPPLIER	PART NUMBER	QTY
Techstream ADVI*	ADE	TSADVUNIT	1
Techstream 2.0		TS2UNIT	
Techstream Lite		TSLITEPDLR01	
Techstream Lite (Green Cable)		TSLP2DLR01	

*Essential SST.

NOTE

- Only ONE of the Techstream units listed above is required.
- Software version 16.20.027 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.
- Use Techstream or an approved J2534 interface to perform flash reprogramming updates. Visit techinfo.toyota.com for more information regarding J2534 reprogramming.

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
Battery Diagnostic Tool*	DCA-8000P T	1

*Essential SST.

NOTE

Additional SSTs may be ordered by calling 1-800-933-8335.

Brake Squawk/Knock Noise

Calibration Information

MODEL	ECU	CALIBRATION ID	
		PREVIOUS	NEW
RX 450h	Main	F152648501	F152648740
		F152648502	
	Sub	F152648511	F152648750
		F152648512	

Repair Procedure

1. Confirm the condition exists.

Is there a squawk/knock noise from the engine compartment when depressing and/or releasing the brake pedal?

- **YES** — Continue to step 2.
- **NO** — This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

2. Are ANY DTCs stored related to a noise present during brake application?

- **YES** — This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.
- **NO** — Continue to step 3.

3. Replace the brake actuator.

Refer to TIS, applicable model and model year Repair Manual:

- 2016 RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: [Removal](#) / [Installation](#)”
- 2017 – 2018 RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: [Removal](#) / [Installation](#)”
- 2019 RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: [Removal](#) / [Installation](#)”
- 2020 – 2021 RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: [Removal](#) / [Installation](#)”

Brake Squawk/Knock Noise

Repair Procedure (continued)

4. Is the vehicle a 2016 – 2018 model year RX 450h?
 - **YES** — Continue to step 5.
 - **NO** — Go to step 10.

5. Replace the master cylinder reservoir assembly.
Refer to TIS, applicable model and model year Repair Manual:
 - 2016 RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: [Removal](#) / [Installation](#)”
 - 2017 – 2018 RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: [Removal](#) / [Installation](#)”

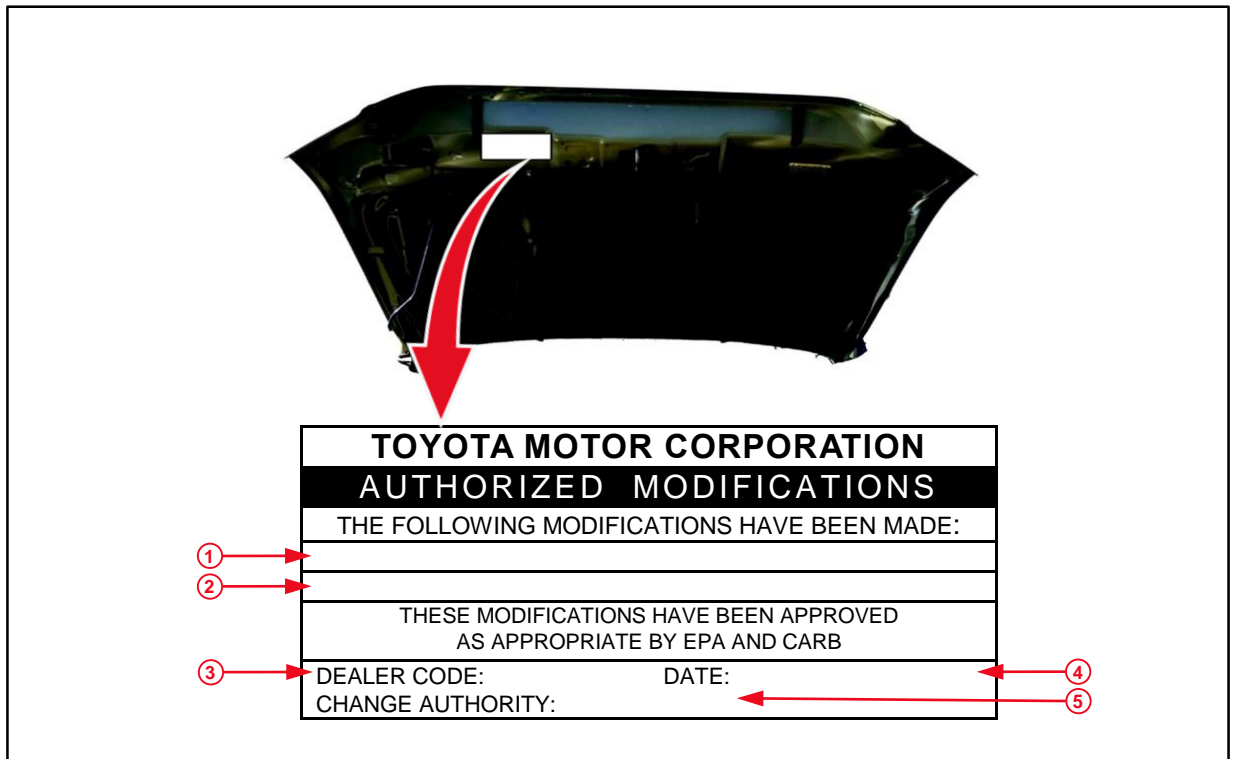
6. Is the vehicle a 2016 – 2017 model year RX 450h?
 - **YES** — Continue to step 7.
 - **NO** — Go to step 10.

Brake Squawk/Knock Noise

Repair Procedure (continued)

7. Use Techstream to confirm if the skid control ECU calibration has been updated and check for the Authorized Modifications Label affixed to the vehicle in the location shown below.
Is the calibration ID listed in Techstream and on the label the latest skid control ECU calibration?
 - **YES** — Go to step 10.
 - **NO** — Continue to step 8.

Figure 1. Location of Authorized Modifications Label on 2016 – 2017 RX 450h



1	Replacement Skid Control Part Number (e.g., 895B0-48030 or 895B0-48031)
2	New Calibration ID (e.g., F152648740)
3	Dealer Code

4	Date Completed
5	This SB Number

Brake Squawk/Knock Noise

Repair Procedure (continued)

8. Flash reprogram the skid control ECU.

NOTE

- The battery diagnostic tool MUST be used in Power Supply Mode to maintain battery voltage at 13.5V while flash reprogramming the vehicle.
- For details on how to use the battery diagnostic station, refer to the [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

Follow the procedures outlined in [L-SB-0001-18](#), *Techstream ECU Flash Reprogramming Procedure*, and flash the skid control ECU with the NEW calibration file update.

9. Prepare and install the Authorized Modifications Label.
 - A. Using a permanent marker, enter the following information on the label:
 - Skid control ECU part number [Refer to the **Parts Information** section for the **NEW PART NUMBER**]
 - Calibration ID(s) [Refer to the **Calibration Information** section for the **NEW CALIBRATION ID**]
 - Dealer Code
 - Repair Date
 - Change Authority [This bulletin number]
 - B. Install the Authorized Modifications Label onto the vehicle at the location shown in Figure 1. The Authorized Modifications Label is available through the MDC, P/N 00451-00001-LBL.

Brake Squawk/Knock Noise

Repair Procedure (continued)

10. Using Techstream, perform the following modified air bleeding procedure.

CAUTION

The Techstream **MUST** be used for air bleeding. If the Techstream is **NOT** used, the bleeding procedure will be incomplete, which is hazardous and may lead to an accident.

NOTICE

- Adjust the brake fluid level so that the brake fluid level is at the MAX line with the ignition ON.
- Perform air bleeding with the shift lever in (P) Park and the parking brake applied.
- As brake fluid may overflow when bleeding, do NOT place the brake fluid can on the brake master cylinder reservoir assembly filler opening.
- Perform air bleeding while maintaining the brake fluid level between the MAX and MIN lines on the brake master cylinder reservoir assembly.
- Air bleeding will be difficult if the following occurs:
 - The No. 2 brake actuator hose (the hose between the brake booster pump assembly and brake master cylinder reservoir assembly) is higher than the brake fluid level and air enters the No. 2 brake actuator hose.
 - During the bleeding procedure, air enters the brake booster pump assembly while it is operating.
- With the auxiliary battery connected, the brake control system operates when a door courtesy switch or brake pedal is operated even with the power switch off. Therefore, if performing any work where it is possible for air to become trapped inside the brake actuator hose, disconnect the two brake booster pump connectors before work.
- While performing air bleeding, the accumulator pressure drop may cause a buzzer to sound. As there is no problem, continue with air bleeding.
- During air bleeding, DTCs for pressure sensor malfunctions, etc., may be stored. AFTER air bleeding and if instructed in the procedures, clear the DTCs.
- Do NOT allow brake fluid on any painted vehicle body surface. If brake fluid leaks onto any painted surface, immediately wash it off.

Brake Squawk/Knock Noise

Repair Procedure (continued)

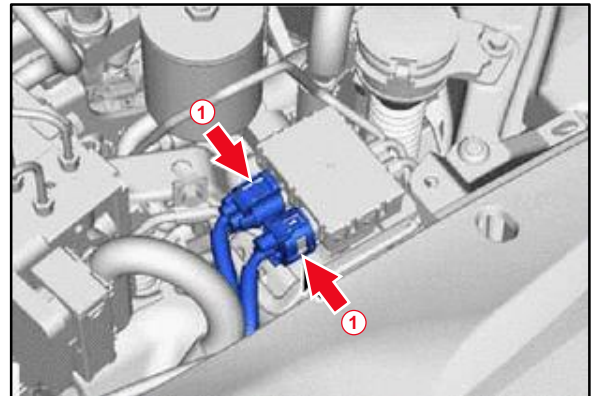
- A. Turn the ignition ON.
- B. Shift to the (P) Park position.
- C. Turn the parking brake ON.
- D. Turn the ignition OFF.
- E. Connect Techstream to the DLC3 and turn the ignition ON.
- F. From the Techstream screen, select Chassis.
- G. Select ABS-VSC-TRC.
- H. Select Reset Memory.
- I. Select Delete the Back-Up Memory.

CAUTION

- Once “Delete the Back-Up Memory” is complete, the zero-point memory for the yaw-rate sensor and G sensor will also be deleted. Make sure to perform a zero-point acquisition for the yaw-rate sensor and G sensor.
- After the zero-point memory for the yaw-rate sensor and G sensor have been deleted, and if 15 seconds pass while the shift position is at “P” and the ignition is ON, only the yaw-rate sensor zero-point will be stored. If a vehicle is operated under this condition, Non-Corrected G Sensor zero-point Malfunction will be stored, and its DTC will be output. Ensure the ignition is turned OFF AFTER the zero-point memory for the yaw-rate sensor and G sensor have been deleted to prevent this from occurring.

- J. While the ignition is OFF, disconnect the two brake booster pump connectors.

Figure 2.



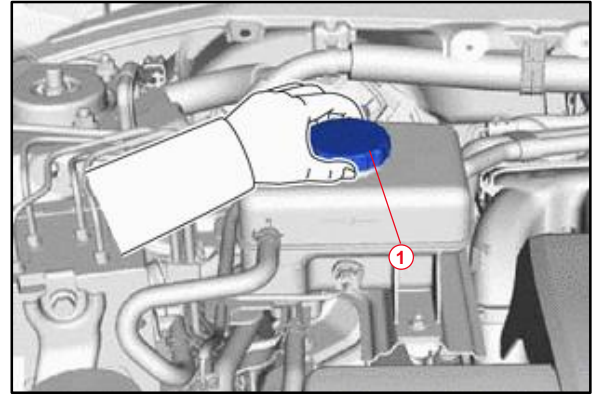
1	Brake Booster Pump Connectors
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Brake Squawk/Knock Noise

Repair Procedure (continued)

- K. Remove the brake master cylinder reservoir filler cap.

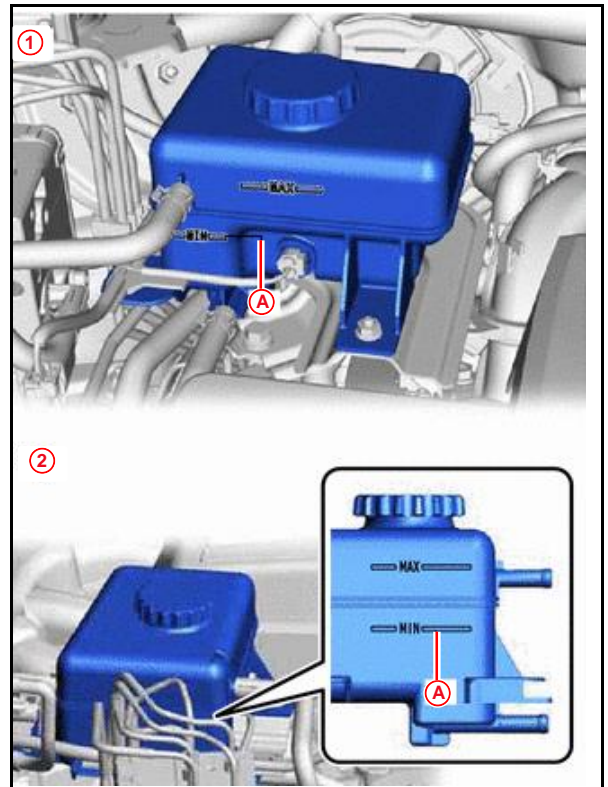
Figure 3.



1	Brake Master Cylinder Reservoir Filler Cap
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- L. Drain the brake fluid in the brake master cylinder reservoir assembly to near the MIN line.

Figure 4.



1	Type A
2	Type B
A	MIN Line

Brake Squawk/Knock Noise

Repair Procedure (continued)

- M. Connect to Techstream and perform the Zero Down by entering the following menus:
Chassis – ABS-VSC-TRC – Utility – ECB (Electronically Controlled Brake System)
Utility – Zero Down

NOTE

Using the Techstream to perform Zero Down causes the pressurized brake fluid in the accumulator to be returned to the brake master cylinder reservoir assembly.

- N. Confirm the buzzer sound, then turn the ignition OFF.
- O. Add brake fluid to the brake master cylinder reservoir assembly until the brake fluid level is between the MAX and MIN lines on the brake master cylinder reservoir assembly.
- P. Turn the power switch ON (IG – ON).
- Q. Enter the following menus in Techstream:
Chassis – ABS-VSC-TRAC – Utility – Air Bleeding
- R. Select “Actuator has been removed” and bleed the brake system by following the instructions on Techstream.

CAUTION

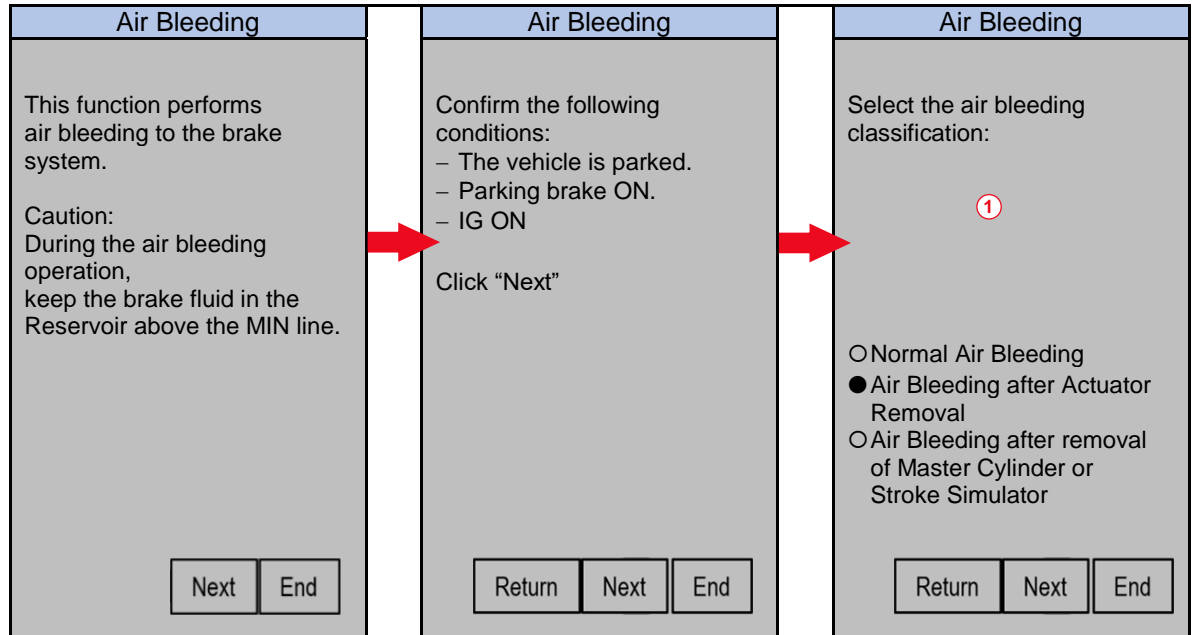
Add brake fluid so that the fluid level in the brake master cylinder reservoir assembly does NOT go below the MIN level.

Brake Squawk/Knock Noise

Repair Procedure (continued)

S. Perform air bleeding per the Techstream instructions below.

Figure 5. Air Bleeding Procedure



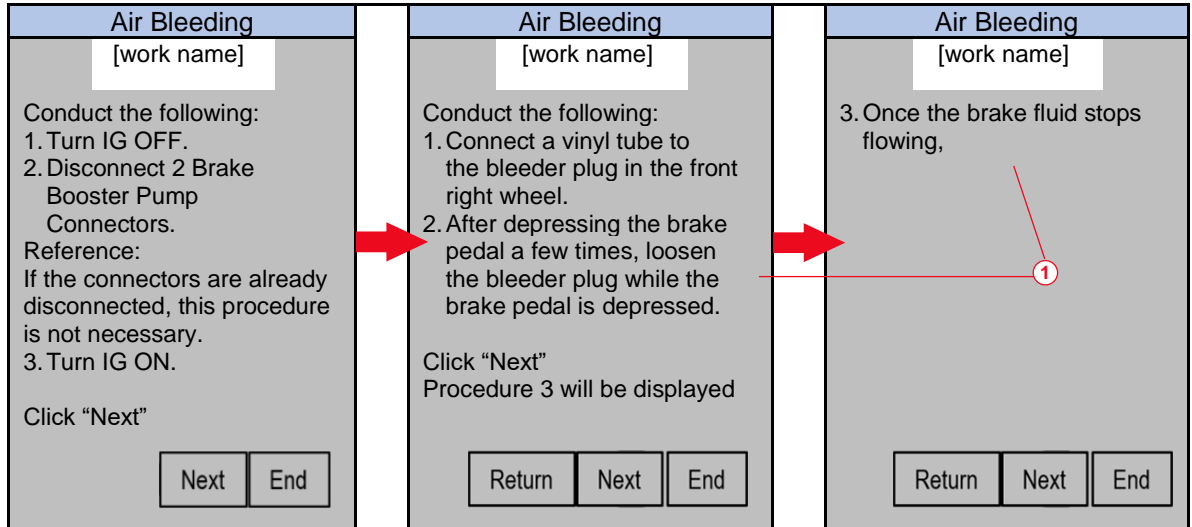
1	Air Bleeding After Actuator Removal Will Discharge Most of the Air
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- (1) Drain the fluid until the fluid level in the reservoir tank reaches MIN level. (Press on the brake pedal while the bleeder plug is open.)
- (2) Fasten the bleeder plug and add the fluid until the fluid level in the reservoir tank reaches MAX level. Repeat substeps A and B twice.
- (3) Discharge the brake fluid by pumping the brake pedal (depress the pedal a few times) and loosen the bleeder plug with the brake pedal depressed and release the pedal after the plug is fastened. Repeat substep C 20 times.

Brake Squawk/Knock Noise

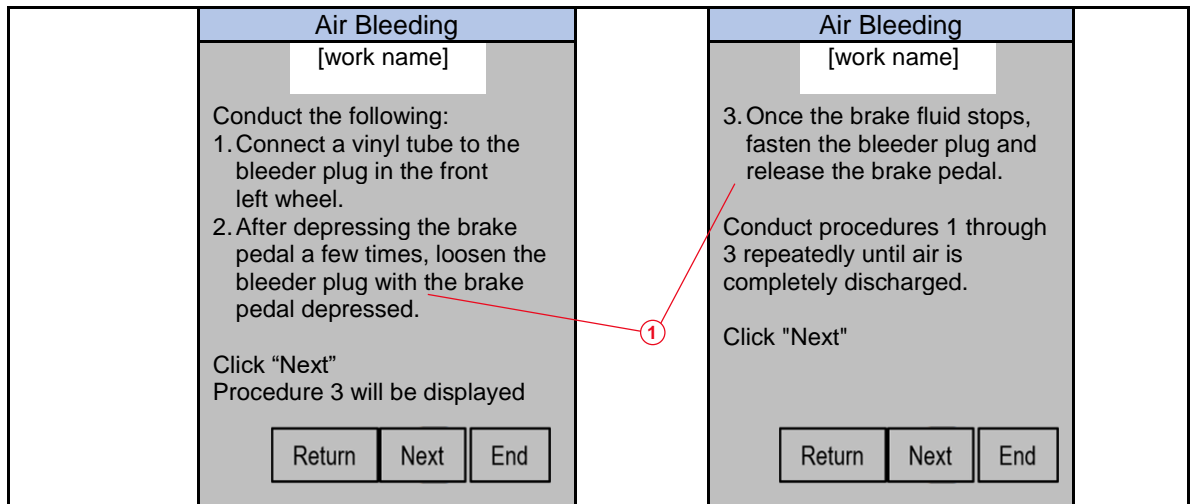
Repair Procedure (continued)

Figure 6. Air Bleeding Procedure (continued)



1 These Steps Must Be Repeated 20 Times

Figure 7. Air Bleeding Procedure (continued)



1 These Steps Must Be Repeated 20 Times

Brake Squawk/Knock Noise

Repair Procedure (continued)

- T. AFTER the solenoid is moved for 40 seconds discharging brake fluid, fasten the bleeder plug and release the brake pedal.

Figure 8. Air Bleeding Procedure (continued)

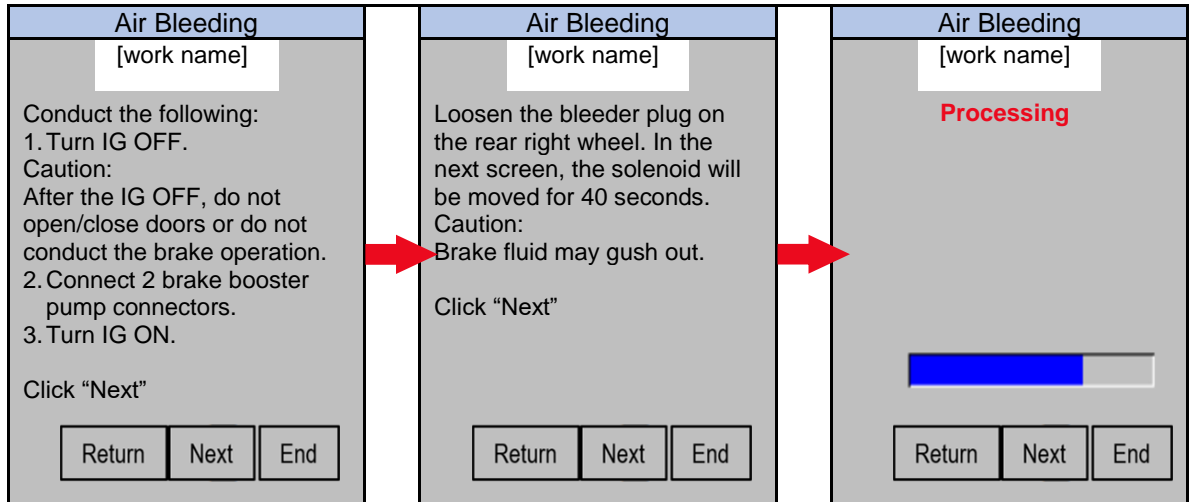
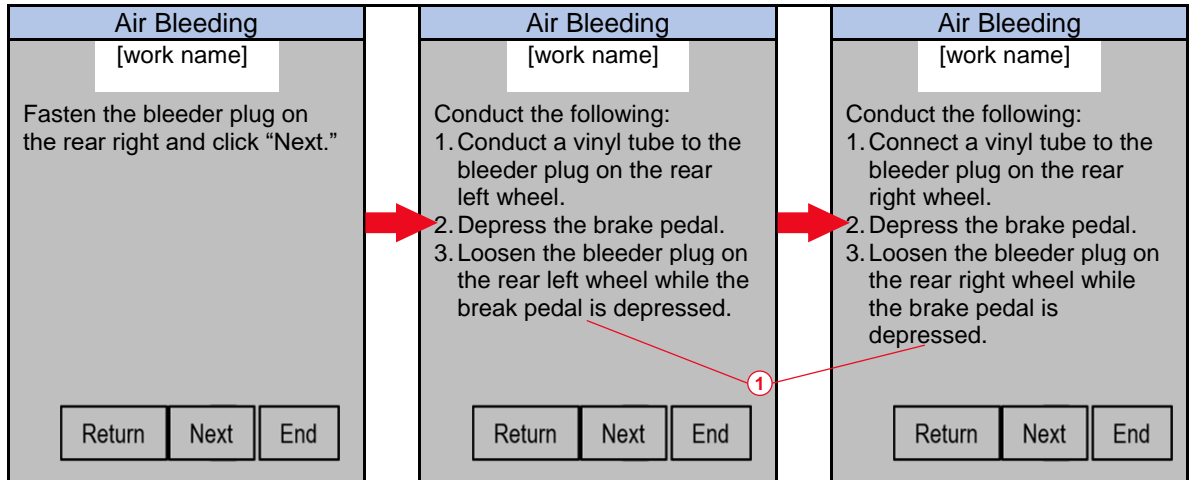


Figure 9. Air Bleeding Procedure (continued)

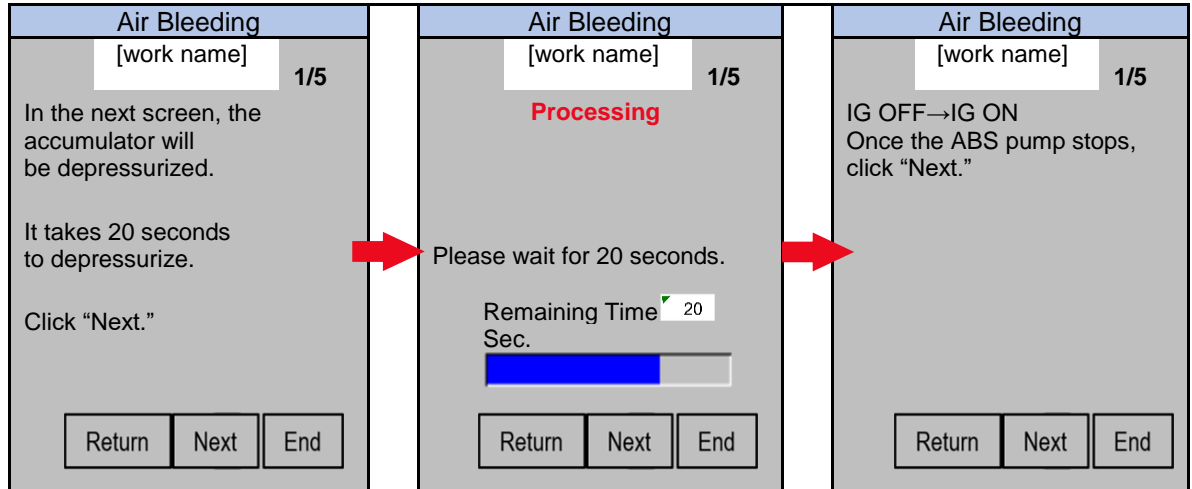


1 These Steps Must Be Repeated 20 Times

Brake Squawk/Knock Noise

Repair Procedure (continued)

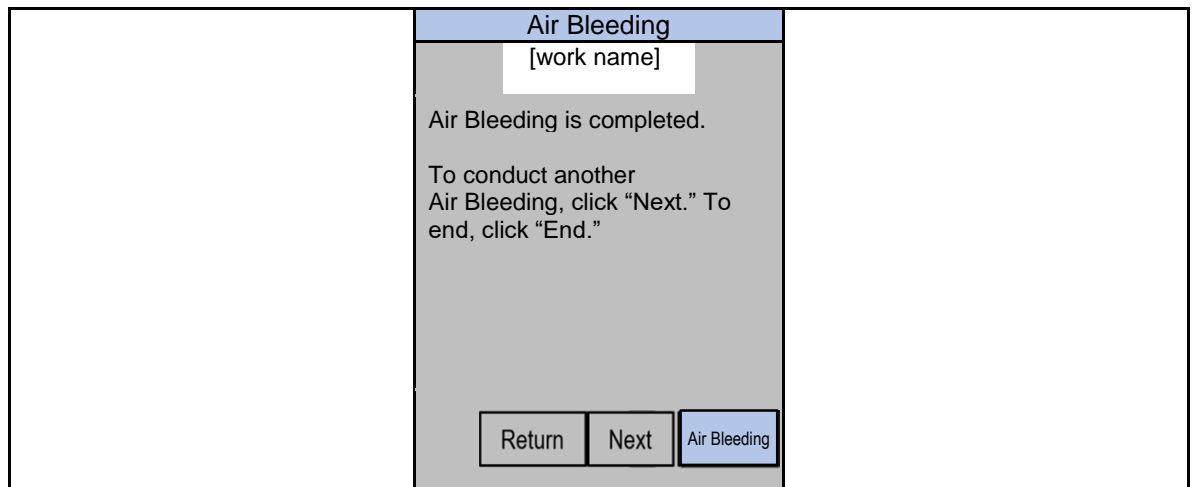
Figure 10. Air Bleeding Procedure (continued)



NOTE

The steps above MUST be repeated five times.

Figure 11. Air Bleeding Procedure (continued)



11. Tighten the bleeder plugs once the air bleeding is completed.
Torque: 8.3 N*m (85 kgf*cm, 73 in*lbf)

Brake Squawk/Knock Noise

Repair Procedure (continued)

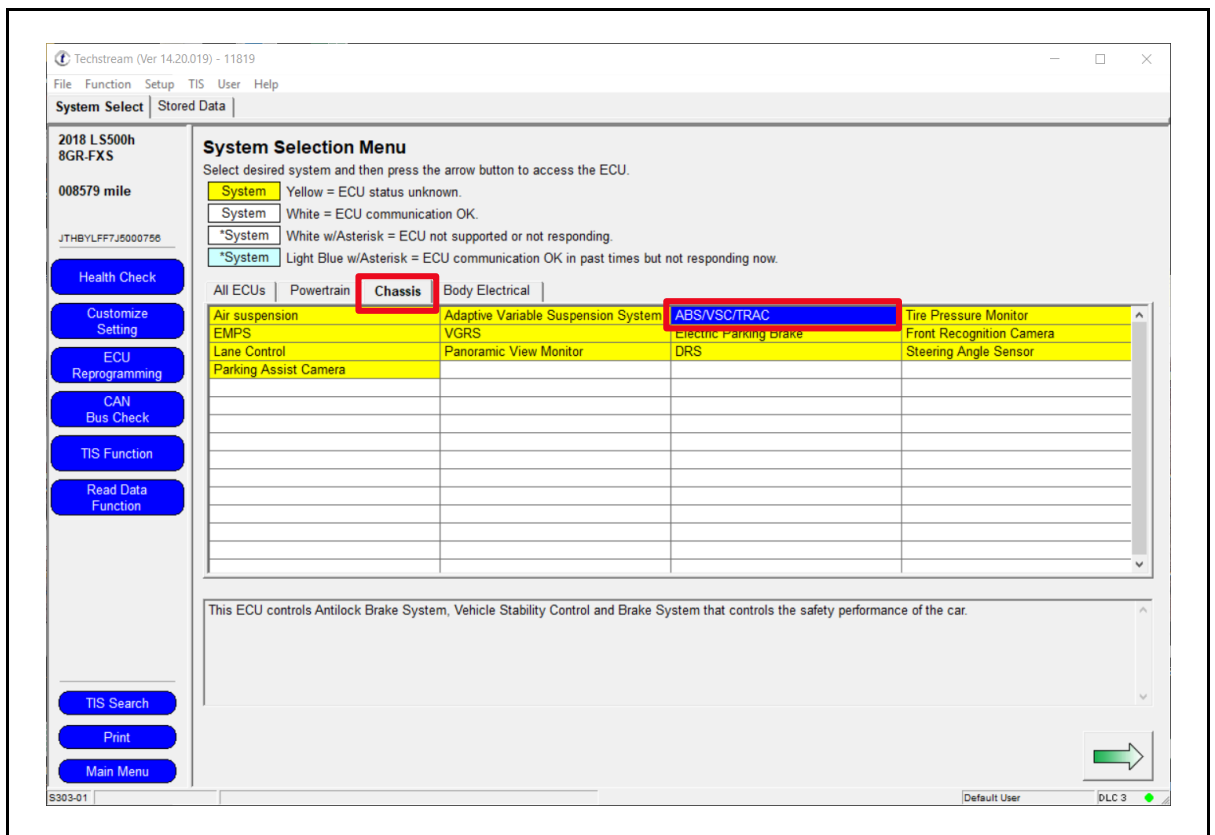
12. Perform the Techstream Active Test to forcefully move the valve in the actuator to complete air bleeding by entering the following menus in Techstream:

Chassis – ABS-VSC-TRC – Active Test – Actuator Air Bleeding Pattern

NOTE

Perform the above operation five times.

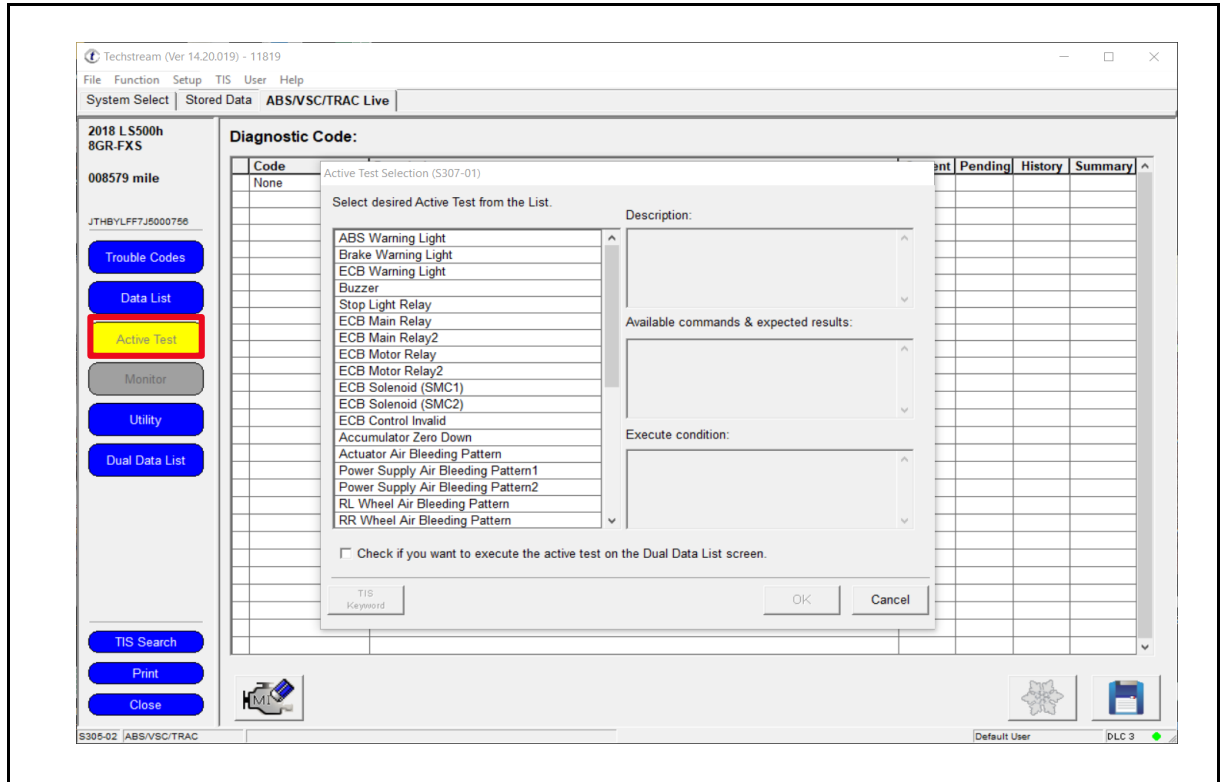
Figure 12. Techstream Screen Image (Chassis – ABS-VSC-TRC)



Brake Squawk/Knock Noise

Repair Procedure (continued)

Figure 13. Techstream Screen Image (Active Test)



Brake Squawk/Knock Noise

Repair Procedure (continued)

Figure 14. Techstream Screen Image (Actuator Air Bleeding Pattern)

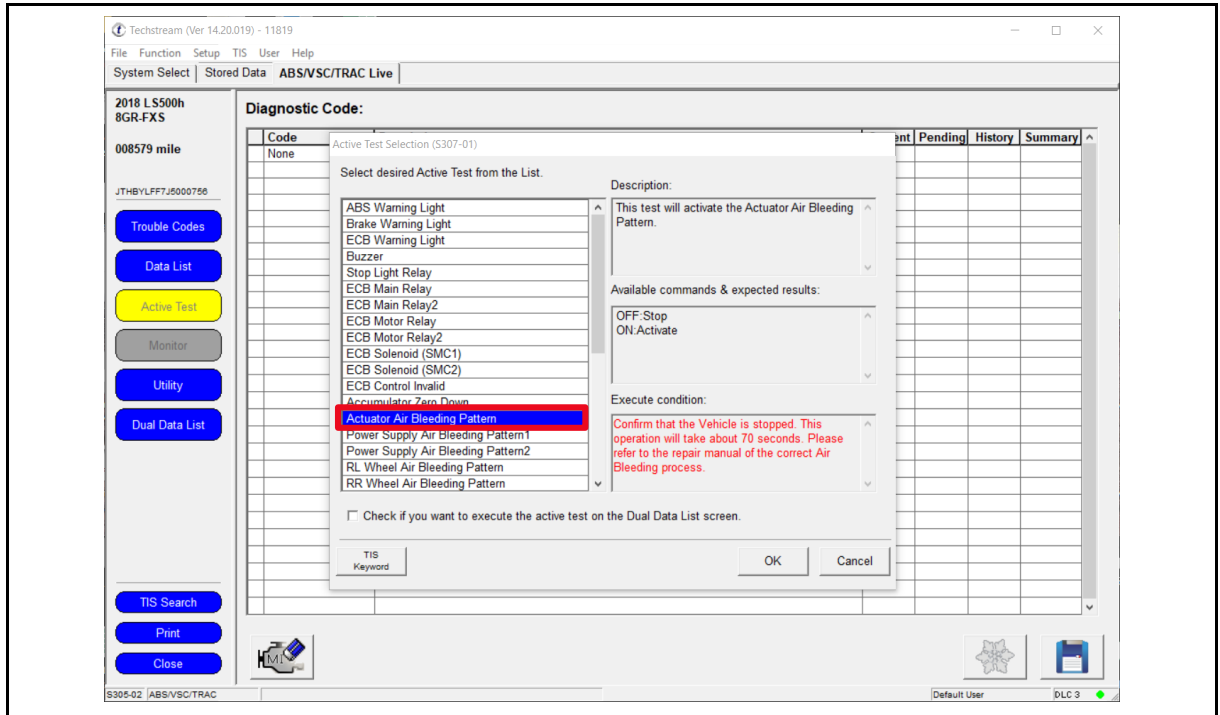
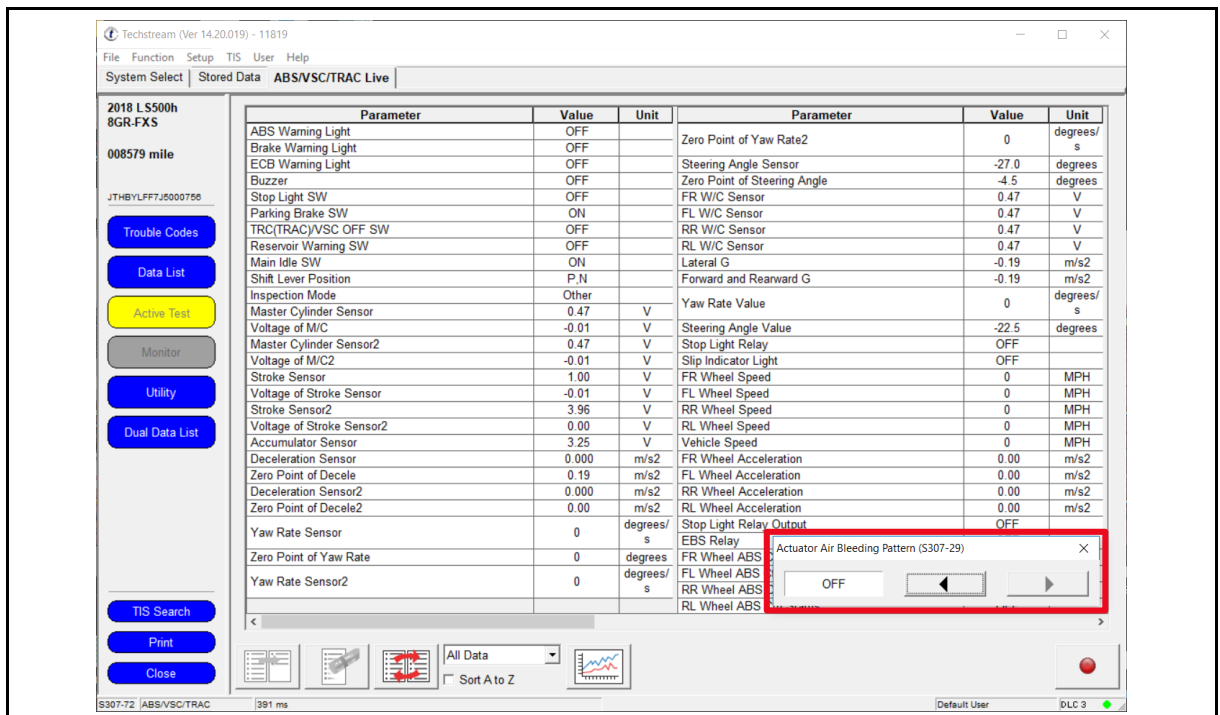


Figure 15. Techstream Screen Image



Brake Squawk/Knock Noise

Repair Procedure (continued)

13. Perform the linear valve offset learning and the brake pedal stroke sensor zero-point learning.

NOTE

BEFORE air bleeding, the linear valve offset learning and brake pedal stroke sensor zero-point value memories were deleted. ONLY the linear valve offset learning and brake pedal stroke sensor zero-point learning should be performed.

Refer to TIS, applicable model and model year Repair Manual:

- [2016 – 2018](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”
- [2019](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”
- [2020 – 2021](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”

14. Delete ANY DTCs.

Refer to TIS, applicable model and model year Repair Manual:

- [2016 – 2018](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”
- [2019](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”
- [2020 – 2021](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”

Brake Squawk/Knock Noise

Repair Procedure (continued)

15. Turn the ignition OFF.

16. Disconnect the Techstream from the DLC3.

17. Inspect for brake fluid leakage.

18. Inspect and adjust the amount of the brake fluid.
Refer to TIS, applicable model and model year Repair Manual:
 - [2016 – 2021](#) RX 450h:
Brake – Brake Control/Dynamic Control System – “Brake System (Other): Brake Fluid: On-Vehicle Inspection

19. Install the brake master cylinder reservoir filler cap assembly.

20. Test-drive the vehicle to confirm the squawk/knock noise is no longer present.