

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
2018 - 2021	LC500, LC500H	

REVISION NOTICE

February 22, 2022 Rev1:

- The Warranty Information section has been updated.
- Any previous printed versions of this bulletin should be discarded.

Introduction

Some 2018 – 2021 model year LC 500 and LC 500h vehicles may exhibit a squawk/knock noise from the engine compartment when depressing and/or releasing the brake pedal while stationary or driving. Follow the Repair Procedure in this bulletin to address this condition.

Brake Squawk/Knock Noise

Production Change Information

This bulletin applies to vehicles produced **BEFORE** the Production Change Effective VINs shown below.

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
LC 500	Motomachi	2WD	JTHHP5AY#JA004523
LC 500h			JTHHY5AY#JA004523

Warranty Information

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
BR1404	R & R Actuator/Brake Master W/ Simulator Cylinder Assembly and Brake Bleed	5.9	44050-11010	91	99
Combo A	Reprogram Skid Control ECU	0.5			

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

BODY NO.	PART NUMBER		PART NAME	QTY
	PREVIOUS	NEW		
URZ100	895B0-11010		Computer Assy, Skid Control	1
	44050-11010		Actuator Assy, Brake	1
	47201-11030	47210-11100	Cylinder Sub-assy, Brake Master	1
	47070-11030		Pump Assy, Brake Booster W/ Accumulator	1
	47207-11010		Cylinder Sub-assy, Brake Stroke Simulator	1
URZ100 W /LSD	895B0-11030		Computer Assy, Skid Control	1
	44050-11010		Actuator Assy, Brake	1
	47201-11030	47210-11100	Cylinder Sub-assy, Brake Master	1
	47070-11030		Pump Assy, Brake Booster W/ Accumulator	1
	47207-11010		Cylinder Sub-assy, Brake Stroke Simulator	1
GWZ100	895B0-11070		Computer Assy, Skid Control	1
	44050-11010		Actuator Assy, Brake	1
	47201-11030	47210-11100	Cylinder Sub-assy, Brake Master	1
	47070-11030		Pump Assy, Brake Booster W/ Accumulator	1
	47207-11010		Cylinder Sub-assy, Brake Stroke Simulator	1
GWZ100 W/ LSD	895B0-11090		Computer Assy, Skid Control	1
	44050-11010		Actuator Assy, Brake	1
	47201-11030	47210-11100	Cylinder Sub-assy, Brake Master	1
	47070-11030		Pump Assy, Brake Booster W/ Accumulator	1
	47207-11010		Cylinder Sub-assy, Brake Stroke Simulator	1

Brake Squawk/Knock Noise

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 16.30.011 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.

REQUIRED TOOLS & MATERIAL	PART NUMBER	QUANTITY
Cap Bleeder Plugs	31478-30010	11
Plug Brake Actuator	44518-12020	1
Plugs Brake Actuator	44511-58010	2
Hose Plugs	09053-1C220	2

Brake Squawk/Knock Noise

Calibration Information

MODEL	ENGINE	PART NUMBER		ECU TYPE	CALIBRATION ID	
		PREVIOUS	NEW		PREVIOUS	NEW
LC 500	2UR-GSE	895B0-11010		Engine	F152611011	F152611012/ F152611022
				Transmission	F152611021	
		895B0-11030		Engine	F152611031	F152611032/ F152611042
				Transmission	F152611041	
LC 500h	8GR-FXS	895B0-11070		Engine	F152611051	F152611052/ F152611062
				Transmission	F152611061	
		895B0-11090		Engine	F152611072	F152611073/ F152611083
				Transmission	F152611082	

Procedures

- [Diagnosis](#) 5
- [Brake Control Brake Actuator Assembly Removal](#)..... 6
- [Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal](#) 25
- [Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Installation](#) 32
- [Brake Control Brake Actuator Assembly Installation](#)..... 37
- [Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding](#)..... 56

Repair Procedure

Diagnosis

1. Confirm the condition exists.
Is there a squawk/knock noise from the engine compartment when depressing and/or releasing the brake pedal while stationary or driving?
 - **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 the next section.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal

1. Replace the brake component assemblies that apply.
Refer to TIS, applicable model and model year Repair Manual when directed.

NOTICE

ONLY the hose plugs are reusable under the conditions noted below.

The hose plugs may be reused under the following conditions.

- There is no debris on the hose plugs BEFORE use.
- The hose plugs are ONLY used for brake fluid.
- The hose plugs are thoroughly washed AFTER use and stored once completely dry.

The following parts can be reused. Handle them with care.

NOTE

Details are noted in the following pages when applicable.

- Three brake tubes
- Hose
- Brake actuator tube No. 3
- Brake actuator way No. 1
- Brake actuator bracket No. 1
- Brake actuator bracket No. 2
- Brake actuator bracket No. 3
- Tube clamp bracket
- Bolts and nuts

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

2. Disassemble the brake control actuator assembly.

WARNING

The following list shows adjustments/initializations/registrations required AFTER parts attachment/detachment, AND parts replacement when assembling/disassembling the brake actuator assembly.

Table 1. Required Operations

PARTS TO BE REPLACED/OPERATIONS	REQUIRED OPERATIONS	PHENOMENON WHEN THE OP IS NOT PERFORMED/FUNCTIONS THAT WOULD NOT OPERATE
Brake Actuator Assembly (Including Attachment/Detachment)	<ul style="list-style-type: none"> Delete Linear Valve Offset Learning Memory and Brake Pedal Stroke Sensor Zero-point Learning Value Memory Perform Linear Valve Offset Learning and Brake Pedal Stroke Sensor Zero-point Learning 	<ul style="list-style-type: none"> Brake Feel Would Change VSC and ABS Would Not Function
	Perform Air Bleeding	<ul style="list-style-type: none"> Brake Effectiveness Would Decline DTCs Would Be Detected
	Storing Steering Sensor Steering Angle Neutral Point	Parking Support Brake System*1
Auxiliary Battery (-) Terminal Disconnection		Panoramic View Monitor System*2

*1: The following auto learning methods are also learned while driving.

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

- 2018 – 2021 LC 500
Vehicle Interior – Pre-Collision Safety – “[Pre-Collision: Pre-Collision System: Initialization](#)”
- 2018 – 2021 LC 500h
Vehicle Interior – Pre-Collision Safety – “[Pre-Collision: Pre-Collision System: Initialization](#)”

*2: When an “!” is displayed in the panoramic view monitor screen, store the steering sensor's steering angle neutral point.

NOTE

There are functions that complete learning by using each system, although these functions stop functioning temporarily when detaching/attaching the auxiliary battery terminal.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

PHENOMENON WHEN NOT PERFORMED/FUNCTIONS THAT WILL NOT WORK	LEARNING CONDITIONS
Lane Keeping Assist System	Drive straight for 5 seconds or more with 22 mph or faster displayed on the meter display.
Lane Control System	
Parking Support Brake System*	
Pre-Crash Safety System	
Lighting System	
VGRS System	

*Refer to the learning method in Techstream settings: *Engine/Hybrid System – Cruise Control*.

Items that complete learning during regular vehicle operations.

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

- 2018 – 2021 LC 500:
Engine/Hybrid System – Cruise Control – [“Cruise Control: Forward Recognition Camera System: Utility”](#)
- 2018 – 2021 LC 500h:
Engine/Hybrid System – Cruise Control – [“Cruise Control: Forward Recognition Camera System: Utility”](#)

PHENOMENON WHEN NOT PERFORMED/FUNCTIONS THAT WILL NOT WORK	LEARNING CONDITIONS
Servomotor	Servomotor Reference Position Recognition by Attaching/Detaching the Battery Terminal
Power Trunk Lid System	Manually, Fully Open the Luggage Compartment Door

NOTICE

BEFORE removing the brake actuator and the brake booster pump assembly, make sure to perform the Accumulator zero down (depressurize the accumulator) by using Techstream.

HINT

When the auxiliary battery is connected, even when the ignition is OFF, “the door courtesy switch ON” and “the brake pedal operation” will make the brake control system start. Do NOT open/close doors or conduct the brake pedal operation while the auxiliary battery is connected during service operations of the brake system component.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

3. Perform air suspension control prohibition.

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

- [2018 – 2021](#) LC 500:
Suspension – Suspension Control – “Adaptive Variable Suspension System: Precaution”
- [2018 – 2021](#) LC 500h:
Suspension – Suspension Control – “Adaptive Variable Suspension System: Precaution”

4. Remove the No. 2 deck board.

NOTE

- Perform Repair Manual steps 1, and 4 – 14.
- Do NOT perform steps 2 – 3 (Removing the Auxiliary Battery Terminal) in the Repair Manual. The battery will be removed AFTER step 10 (Perform the Accumulator Down) in this Service Bulletin.

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

- [2018 – 2021](#) LC 500:
Power Source/Network – Battery/Charging – “2UR-GSE (Battery / Charging): Sub Battery: Removal”
- [2018 – 2021](#) LC 500h:
Power Source/Network – Battery/Charging – “8GR-FXS (Battery / Charging): Sub Battery: Removal”

5. Remove the radiator support to frame seal RH.

NOTE

- This step ONLY applies to LC 500h vehicles.
- Perform Repair Manual steps 1 – 3.

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

- [2018 – 2021](#) LC 500h:
Engine/Hybrid System – Intake/Exhaust – “8GR-FXS (Intake / Exhaust): Exhaust Manifold: Removal”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

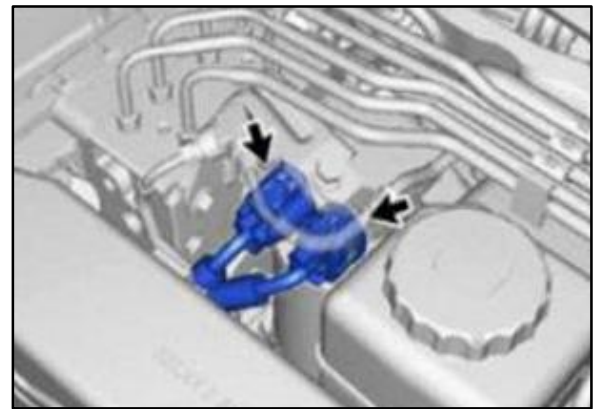
6. Remove the cowl top ventilator louver sub-assembly.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Vehicle Exterior – Wiper/Washer – “Wiper / Washer: Front Wiper Motor: Removal”
 - [2018 – 2021](#) LC 500h:
Vehicle Exterior – Wiper/Washer – “Wiper / Washer: Front Wiper Motor: Removal”

7. Under the “IG-OFF,” disconnect the two brake booster pump connectors.

NOTE

This step will prevent fluid from contacting the connector and protect the connector on the vehicle side.

Figure 1.

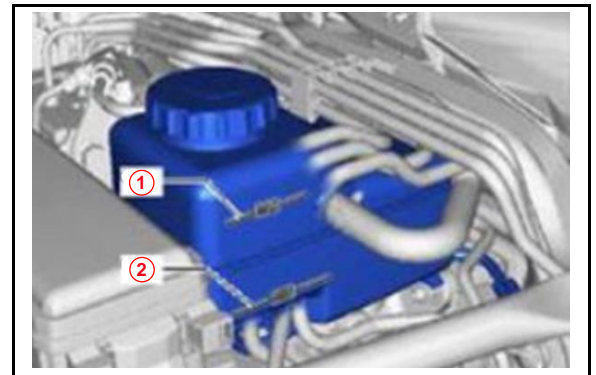


8. Perform accumulator zero down (depressurize the accumulator).
Adjust the brake fluid level to the MIN line.

CAUTION

Do NOT drop brake fluid onto coated vehicle body surfaces. If fluid gets on ANY coated vehicle body surface, wipe the brake fluid off the vehicle body surface and wash the surface with water.

Figure 2.



1	MAX Line
2	MIN Line

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

- A. Under the “IG-OFF,” connect Techstream to the DLC3.
- B. Turn the “IG-ON” and confirm that the parking brake is functioning.
- C. Turn the Techstream power switch ON.
- D. Go to the following from the Techstream Menu:
Chassis – ABS-VSC-TRC – Operation Support – Electronic Control Brake Support – Select Perform Accumulator zero down and perform Chassis – ABS-VSC-TRC – Operation Support.

HINT

Perform accumulator zero down by using Techstream will return the pressure accumulated brake fluid in the accumulator back to the brake master cylinder reservoir assembly.

- E. Confirm the buzzer sound and turn the “IG-OFF.”

NOTE

The battery will be disconnected AFTER performing accumulator zero down.

CAUTION

AFTER the ignition is turned OFF, a waiting period may be needed before detaching the auxiliary battery (–) terminal. **BEFORE** performing this operation, confirm the cautionary notes regarding auxiliary battery (–) terminal detachment.

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

- [2018 – 2021](#) LC 500:
General – Maintenance – “Maintenance: Battery: Removal”
- [2018 – 2021](#) LC 500h:
General – Maintenance – “Maintenance: Auxiliary Battery: Removal”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

9. Disconnect the auxiliary battery (–) terminal.

NOTE

Perform Repair Manual steps 2 and 3.

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

- [2018 – 2021](#) LC 500:
General – Maintenance – “Maintenance: Battery: Removal”
- [2018 – 2021](#) LC 500h:
General – Maintenance – “Auxiliary Battery: Removal”

10. Remove fender apron brace sub-assembly RH.

NOTE

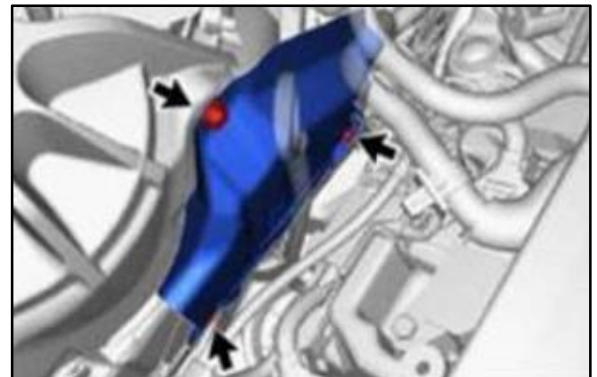
Perform Repair Manual steps 3 – 13.

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

- [2018 – 2021](#) LC 500h:
Engine/Hybrid System – Emission Control – “8GR-FXS (Emission Control): EGR Cooler: Removal”

11. Remove the front fender apron insulator LH.
12. Remove the three bolts and remove the front fender apron insulator LH.

Figure 3.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

13. Disconnect the relay block.

NOTE

This step ONLY applies to LC 500h.

- A. Disengage the fitting of the three claw parts and disconnect and remove the relay block cover UPR No.3.

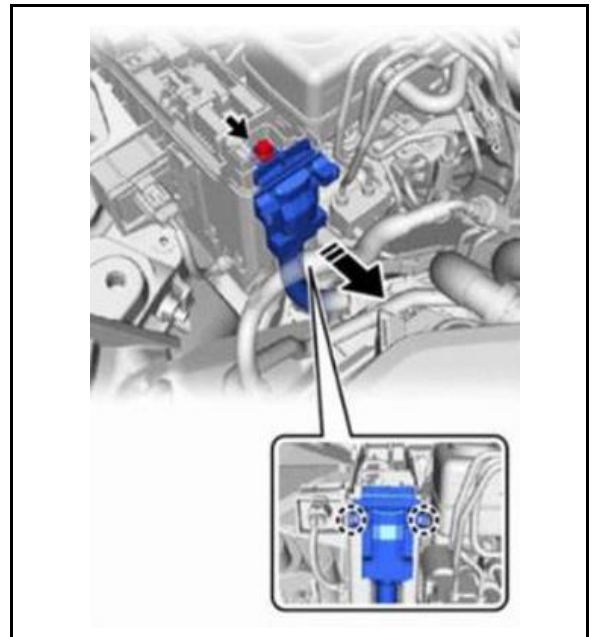
- B. Remove the bolt.

- C. Disengage the fitting of the two claw parts and remove the wiring harness protector.

Figure 4.



Figure 5.



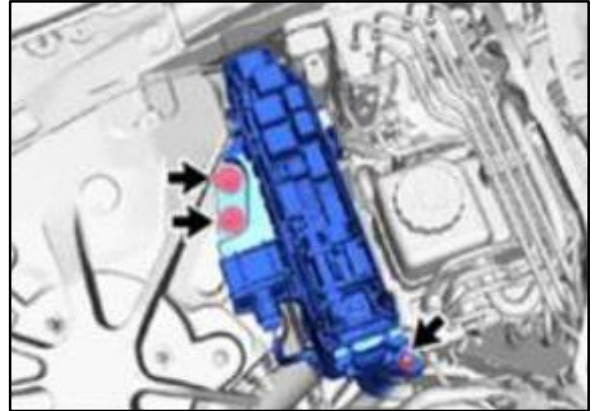
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

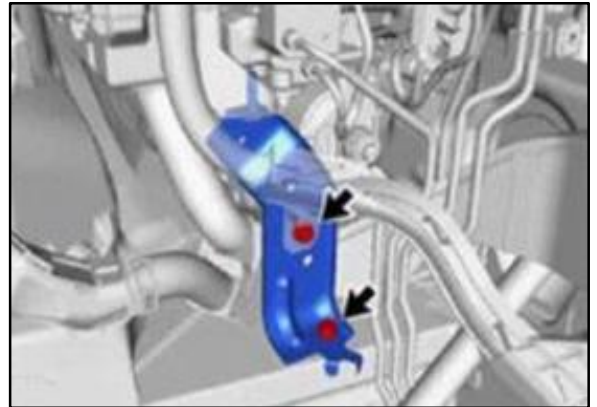
- D. Remove two bolts and one nut and disconnect the relay block.

Figure 6.



- E. Remove the two bolts and remove the wire harness clamp.

Figure 7.



- F. Remove the two bolts and remove the wire harness clamp bracket.

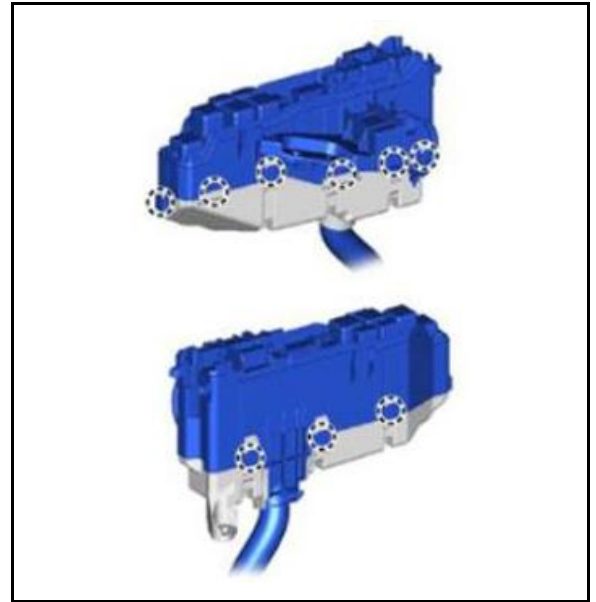
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

- G. Detach the nine claws and remove the relay block cover LWR.

Figure 8.

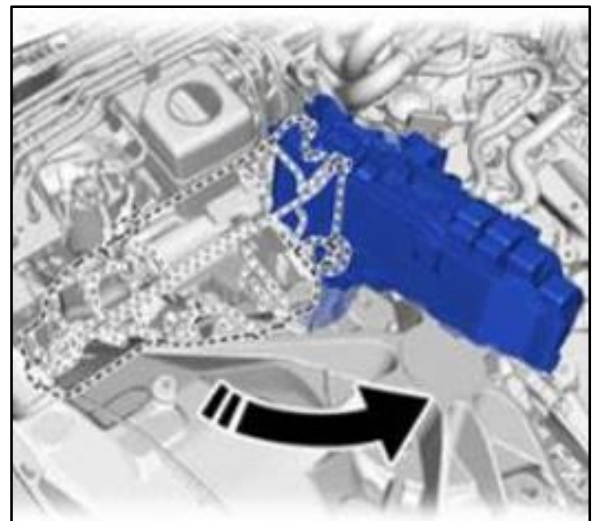


- H. Move the relay block to make space as shown.

NOTE

This step will prevent the fluid from contacting the relay block.

Figure 9.



Brake Squawk/Knock Noise

Repair Procedure (continued)

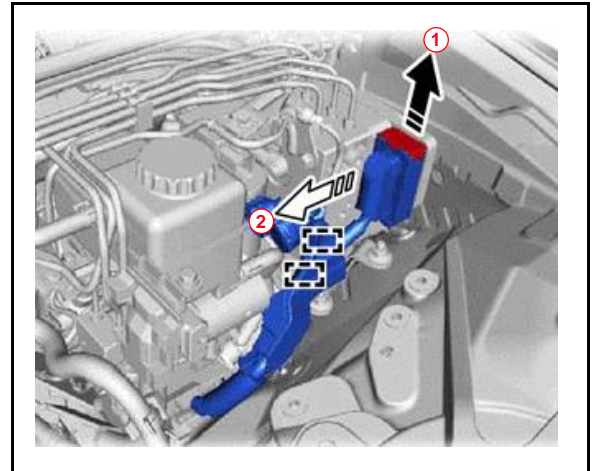
Brake Control Brake Actuator Assembly Removal (continued)

14. Disconnect wire harness.
 - A. Release the lock lever and disconnect the brake actuator connector from the brake actuator assembly.

NOTE

This step prevents fluid from contacting the vehicle side connector and prevents debris intrusion.

Figure 10.



1	Direction to Unlock
2	Direction to Detach

- B. Disconnect the brake actuator connector from the actuator assembly.

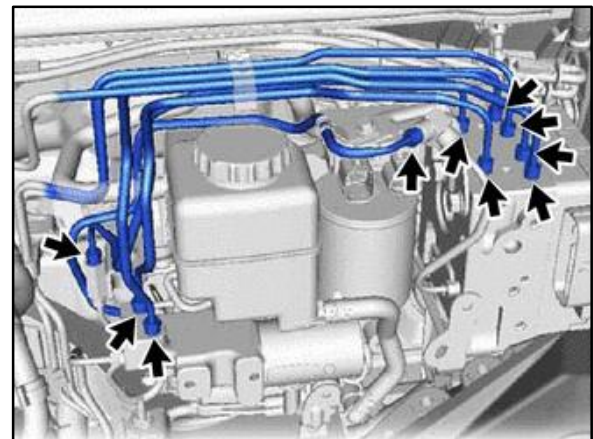
CAUTION

Protect the connector surface to prevent brake fluid from contacting it.

- C. Remove the two clips.

15. Disconnect the brake tube.
 - A. Using a union-nut wrench, remove the 10 flare nuts from the brake tube.

Figure 11.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

- B. AFTER each tube is disconnected, quickly attach the cap.

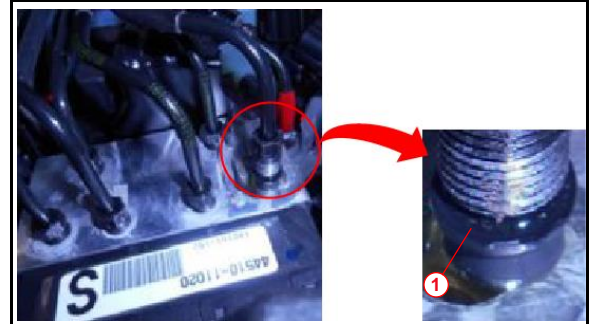
NOTICE

- Do NOT bend or damage the brake tubes.
- Do NOT allow debris, such as dust, to contact the brake tube connecting part.

NOTE

This step prevents air from mixing into the tubes.

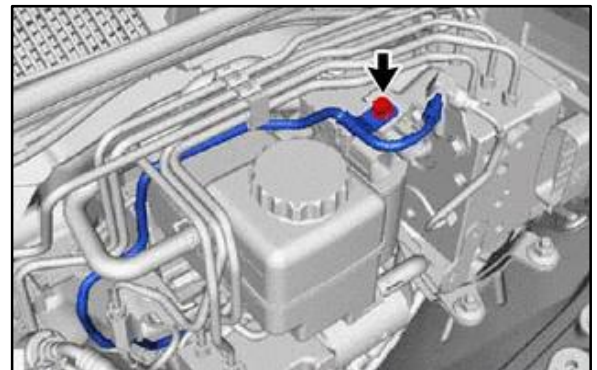
Figure 12.



1	Cap
---	-----

- C. Remove one bolt and disconnect the brake actuator tube No. 2.

Figure 13.



- D. While the component is mounted in the vehicle, attach the plug onto the brake actuator way.

Figure 14.



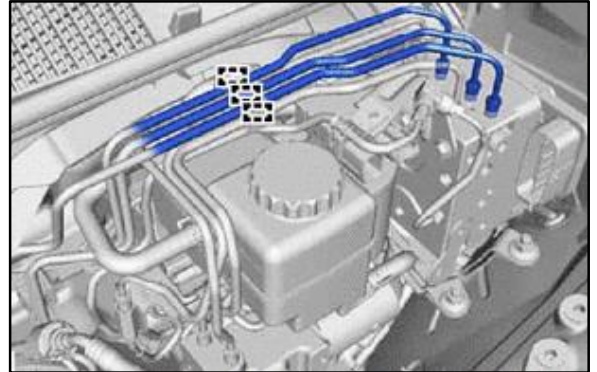
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

16. Remove the brake tube.
 - A. Disengage the fitting of the claw parts and remove the upper three brake tubes from the clamp.

Figure 15.

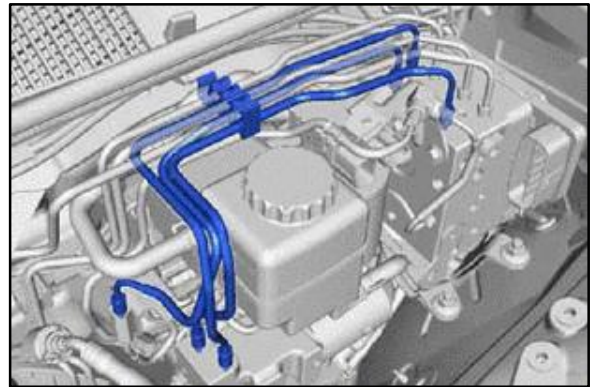


- B. Remove the lower three brake tubes with the clamp still attached on them.

NOTE

- The three removed brake tubes will be reused.
- This step prevents air from mixing into the tubes.

Figure 16.



NOTE

Leave the caps on AFTER removing the three brake tubes.

Brake Squawk/Knock Noise

Repair Procedure (continued)

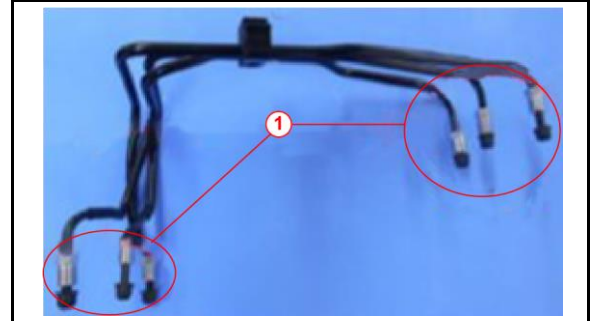
Brake Control Brake Actuator Assembly Removal (continued)

- C. Detach the claws and disconnect the three brake tubes from the clamp.

Figure 17.



Figure 18.



1	Cap
---	-----

17. Remove brake actuator assembly with bracket.
- A. Move the clamp and disconnect the brake actuator hose from the brake master cylinder reservoir assembly.

NOTE

- This step prevents air from mixing into the hose.
- Attach the plug to the reservoir tank.

Figure 19.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

- B. AFTER the hose is disconnected, quickly attach the hose plug.

NOTE

This step prevents air from mixing into the hose.

Figure 20.

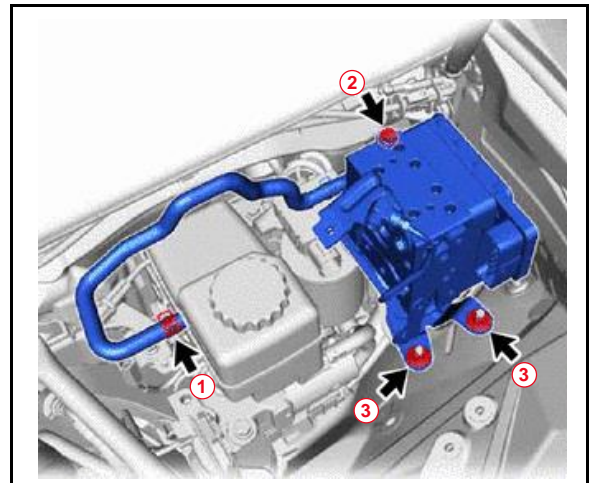


- C. Avoiding the brake tubes, remove the bolt and two nuts, then remove the brake actuator assembly with bracket.

NOTICE

- Do NOT bend or damage the brake tubes.
- Do NOT allow debris, such as dust, to get on the brake tube connection part.
- Do NOT hold the brake actuator assembly by its connector part.

Figure 21.



1	Clamp
2	Bolt
3	Nut

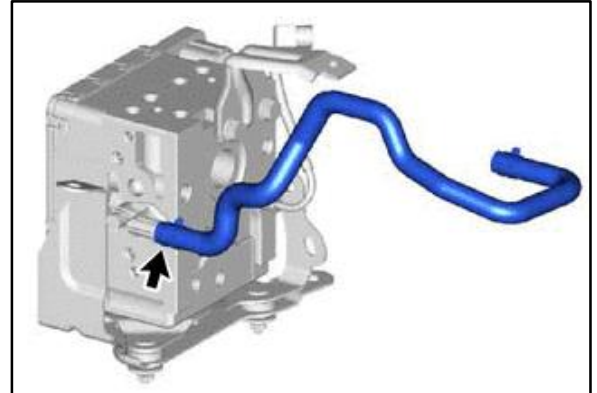
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

18. Disconnect the brake actuator hose.
Move the hose clamp and remove the brake actuator hose from the actuator assembly.

Figure 22. Brake Actuator Hose



19. AFTER the hose is disconnected, quickly attach the hose plug.

NOTE

The disconnected hose will be reused to prevent air from mixing into the hose.

Figure 23.

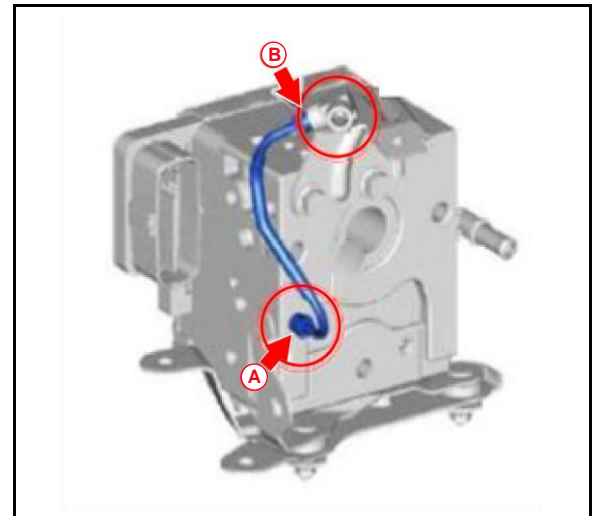


20. Using a union-nut wrench, disconnect the brake actuator tube No. 3 from the brake actuator assembly.

NOTE

The disconnected brake actuator tube No. 3 and brake actuator way No. 1 will be reused.

Figure 24.



21. AFTER the tube is disconnected, quickly put the cap on "A" as shown. "B" already has a cap.

NOTE

This step will prevent air from mixing into the tubes.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Removal (continued)

NOTE

Do NOT separate the brake actuator tube No. 3 and the brake actuator way No. 1.

22. With the brake actuator tube No. 3 and the brake actuator way No. 1 attached, disconnect them from the brake actuator assembly (see Figure 25).

NOTICE

- Do not bend or damage the Brake Actuator Tube No.3.
- Do NOT allow debris, such as dust, to get on the connection part of the brake actuator tube No. 3.

Figure 25. Removed Actuator in the Form of Assembly

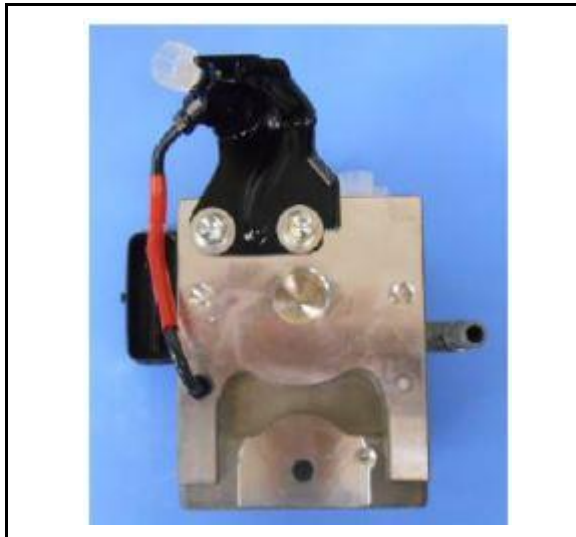


Figure 26. Brake Actuator Tube No. 3 and Brake Actuator Way in the Form of Assembly



Brake Squawk/Knock Noise

Repair Procedure (continued)

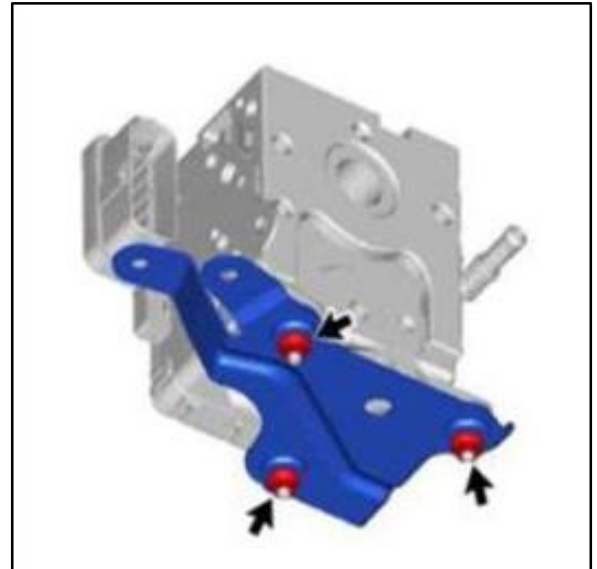
Brake Control Brake Actuator Assembly Removal (continued)

23. Remove the three nuts and remove the brake actuator bracket No. 2 from the brake actuator assembly.

NOTE

The removed Brake Actuator Bracket No. 2 will be reused.

Figure 27.



24. Remove the brake actuator bracket spacers from the brake actuator bracket cushions.
25. Remove the three brake actuator bracket cushions from the bracket actuator bracket No. 2.

Figure 28.



Brake Squawk/Knock Noise

Repair Procedure (continued)

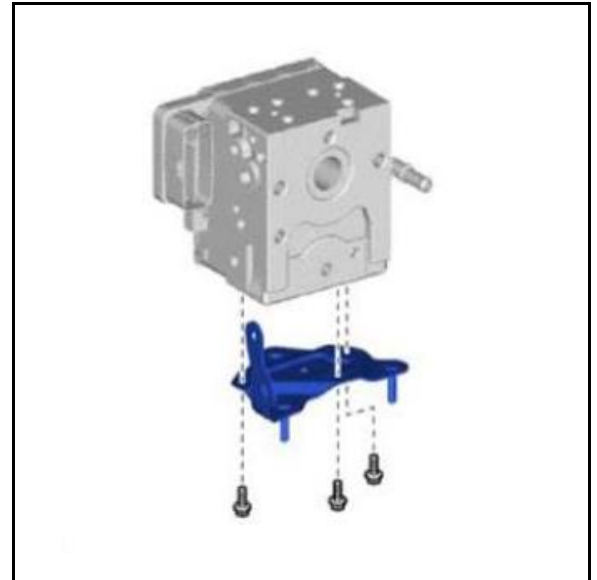
Brake Control Brake Actuator Assembly Removal (continued)

26. Remove the three bolts and remove the brake actuator bracket No. 1 from the brake actuator assembly.

NOTE

The removed brake actuator bracket No. 1 will be reused.

Figure 29.

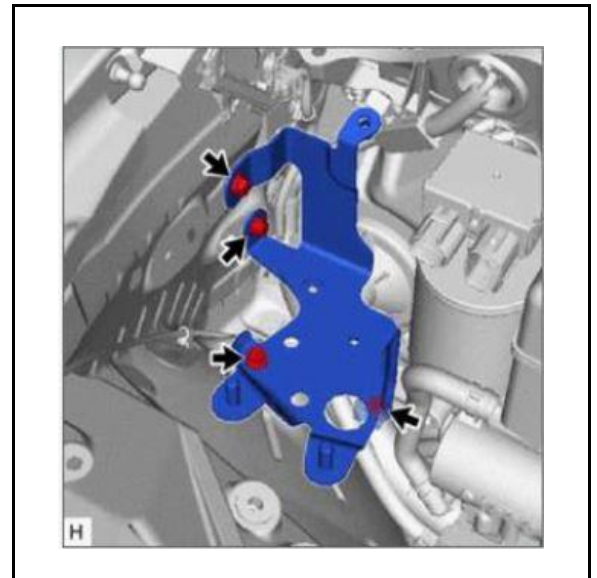


27. Remove the four bolts and remove the brake actuator bracket No. 3 from the vehicle body.

NOTE

The removed brake actuator bracket No. 3 will be reused.

Figure 30.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal

NOTICE

The following list shows adjustments/initializations/registrations required after parts attachment/detachment as well as parts replacement when assembling/disassembling the Brake Master Cylinder SUB-Assembly.

Table 2. Required Operations

PARTS TO BE REPLACED/OPERATIONS	REQUIRED OPERATIONS	PHENOMENON WHEN THE OP IS NOT PERFORMED/FUNCTIONS THAT WOULD NOT OPERATE
Auxiliary Battery Terminal Attachment/Detachment	Storing Steering Sensor Steering Angle Neutral Point	Parking Support Brake System* ¹
		Panoramic View Monitor System* ²
Brake Pedal Support Assembly (Including the Attachment/Detachment)	<ul style="list-style-type: none"> Delete Linear Valve Offset Learning memory and brake pedal stroke sensor zero-point learning value memory Perform Linear Valve Offset Learning and brake pedal stroke sensor zero-point learning 	<ul style="list-style-type: none"> Brake feel would change DTCs are stored ABS warning light illuminates Brake warning light/yellow (minor malfunction) illuminates Slip indicator light illuminates VSC disabled or malfunctions
Brake Actuator Assembly (Including the Attachment/Detachment)	<ul style="list-style-type: none"> Delete Linear Valve Offset Learning memory and brake pedal stroke sensor zero-point learning value memory. Perform Linear Valve Offset Learning and brake pedal stroke sensor zero-point learning 	<ul style="list-style-type: none"> Brake feel would change DTCs are stored ABS warning light illuminates Brake warning light/yellow (minor malfunction) illuminates Slip indicator light illuminates VSC disabled or malfunctions
	Perform Air Bleeding	<ul style="list-style-type: none"> Brake effectiveness would decline Diagnosis Codes would be detected

*1: There are also auto learning methods that are learned while driving.

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

- [2018 – 2021](#) LC 500
Engine/Hybrid System – Cruise Control – “Cruise Control: Forward Recognition Camera System: Utility”
- [2018 – 2021](#) LC 500h
Engine/Hybrid System – Cruise Control – “Cruise Control: Forward Recognition Camera System: Utility”

*2: When an “!” is displayed in the panoramic view monitor screen, store the steering sensor's steering angle neutral point.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal (continued)

PHENOMENON WHEN NOT PERFORMED/FUNCTIONS THAT WILL NOT WORK	LEARNING CONDITIONS
Lane Keeping Assist System	Drive straight for 5 seconds or more with 22 mph or faster displayed on the meter display.
Lane Control System	
Parking Support Brake System*	
Pre-Crash Safety System	
Pre-Crash Safety System	
Adaptive Hi-beam System	
Lighting System (Exterior) Cornering Lamp	
VGRS System	

*The following auto learning methods are also learned while driving. Refer to TIS, applicable model and model year Repair Manual:

- [2018 – 2021](#) LC 500
Vehicle Interior – Pre-Collision Safety – “Pre-Collision: Pre-Collision System: Initialization”
- [2018 – 2021](#) LC 500h
Vehicle Interior – Pre-Collision Safety – “Pre-Collision: Pre-Collision System: Initialization”

Table 3. Items That Complete Learning During Regular Vehicle Operations

PHENOMENON WHEN NOT PERFORMED/FUNCTIONS THAT WILL NOT WORK	LEARNING CONDITIONS
Servomotor	Servomotor Reference Position Recognition by Attaching/Detaching the Battery Terminal
Power Trunk Lid System	Manually, fully open the Luggage Compartment Door

CAUTION

After the ignition is turned OFF, a waiting period may be needed before detaching the auxiliary battery terminal. BEFORE beginning this operation, confirm the cautionary notes regarding auxiliary battery terminal detachment.

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

- [2018 – 2021](#) LC 500
General – Maintenance – “Maintenance: Battery: Removal”
- [2018 – 2021](#) LC 500h
General – Maintenance – “Maintenance: Auxiliary Battery: Removal”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal (continued)

1. Use the applicable Repair Manual link below to complete the following procedures.
 - A. Disconnect the brake booster pump connector.
 - B. Remove the brake actuator assembly with bracket.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Removal”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Removal”

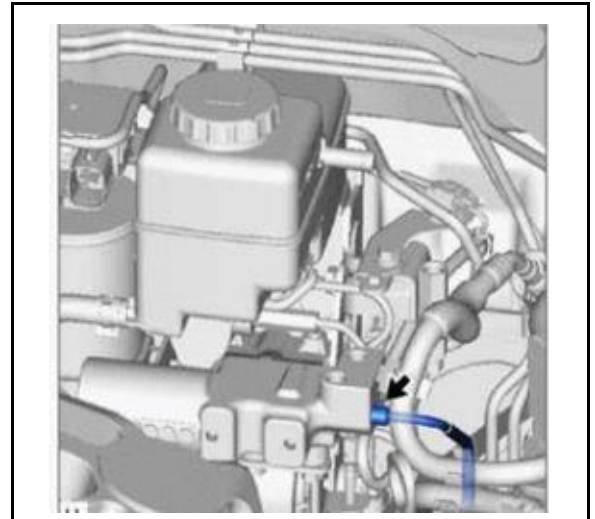
2. Disconnect the brake tube.
Using a union-nut wrench, remove the flare nut on the brake tube.

3. AFTER the tube is disconnected, quickly put the cap on.

NOTE

This step prevents air from mixing into the tubes.

Figure 31.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal (continued)

4. Remove the instrument panel air bag assembly LWR No. 1.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Vehicle Interior – Supplemental Restraint Systems – “Supplemental Restraint Systems: Knee Airbag Assembly (for Driver Side): Removal”
 - [2018 – 2021](#) LC 500h:
Vehicle Interior – Supplemental Restraint Systems – “Supplemental Restraint Systems: Knee Airbag Assembly (for Driver Side): Removal”

5. Remove the No. 2 air duct and the heater to center register sub duct.

NOTE

Perform Repair Manual steps 10 and 11.

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

- [2018 – 2021](#) LC 500:
Steering – Steering Column – “Steering Column: Steering Column Assembly: Removal”
- [2018 – 2021](#) LC 500h:
Steering – Steering Column – “Steering Column: Steering Column Assembly: Removal”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal (continued)

6. Remove the brake pedal return spring.

NOTE

Perform Repair Manual step 5.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other): Brake Pedal: Removal”
- [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other): Brake Pedal: Removal”

7. Remove the stop light switch assembly.

NOTE

Perform Repair Manual steps 5 and 6.

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

- [2018 – 2021](#) LC 500:
Vehicle Exterior – Lighting (ext) – “Lighting (ext): Stop Light Switch: Removal”
- [2018 – 2021](#) LC 500h:
Vehicle Exterior – Lighting (ext) – “Lighting (ext): Stop Light Switch: Removal”

8. Remove the push rod pin.

NOTE

Perform Repair Manual step 8.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other): Brake Pedal: Removal”
- [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other): Brake Pedal: Removal”

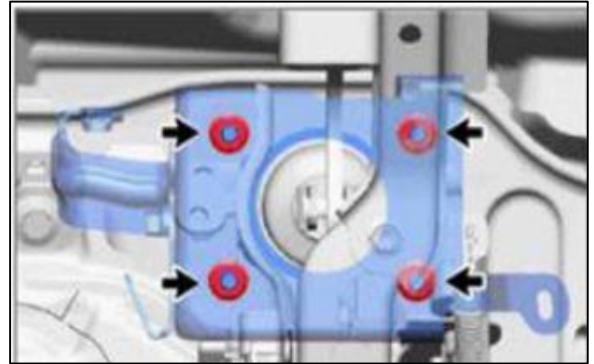
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal (continued)

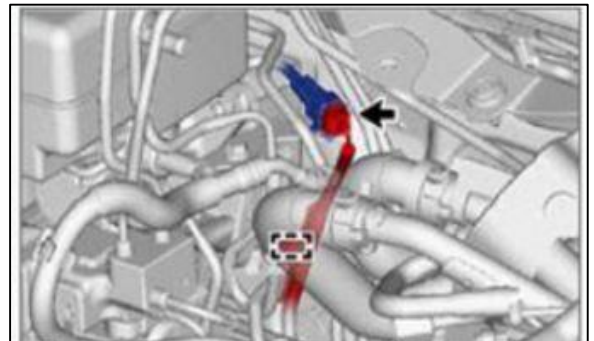
9. Remove the brake master with simulator cylinder assembly.
 - A. Remove the four nuts.

Figure 32.



- B. Disconnect the brake fluid level warning switch connector.
 - C. Remove the wire harness clamp.

Figure 33.

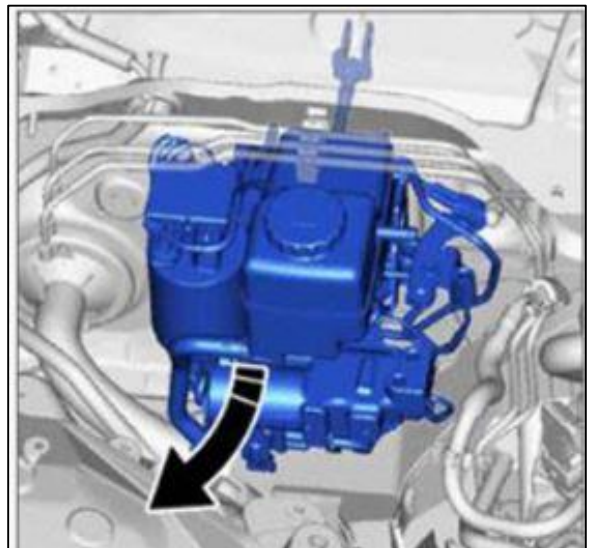


HINT

Slightly pull out the brake master with the simulator cylinder assembly, then remove the wire harness clamp.

10. Remove the brake master with simulator cylinder assembly.

Figure 34.



NOTICE

- Do NOT bend or damage the brake actuator tube No. 2.
- Protect the surface of the relay block during removal to ensure the relay block is not scratched.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Removal (continued)

11. Disconnect the brake tube.
 - A. Remove the brake master cylinder gasket from the brake master with simulator cylinder assembly.

NOTICE

Remove the tube clamp bracket (see Figure 35) from the brake actuator tube No. 2 in the removed brake master cylinder assembly.

HINT

The removed tube clamp bracket will be reused.

Figure 35. In-Vehicle Tube Clamp Bracket

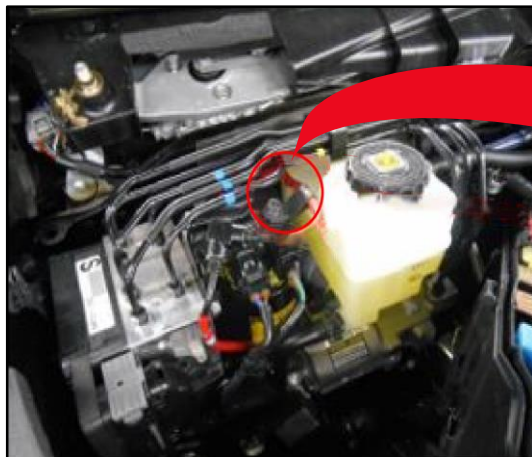


Figure 36. Tube Clamp Bracket



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Installation

1. Install the brake cylinder gasket.
Mount the brake master cylinder gasket on to the brake master with simulator cylinder assembly.
2. Mount the brake master with simulator cylinder assembly.
 - A. Temporarily mount the brake master with simulator cylinder assembly onto the vehicle.

NOTE

Use the tube clamp bracket removed from the brake actuator tube No. 2 for the NEW brake master cylinder assembly.

CAUTION

- Do NOT bend or damage the brake actuator tube No. 2.
- Protect the surface of the relay block during the brake master with the simulator cylinder assembly removal to ensure the relay block is not scratched.

- B. Connect the wire harness clamp.

Figure 37.

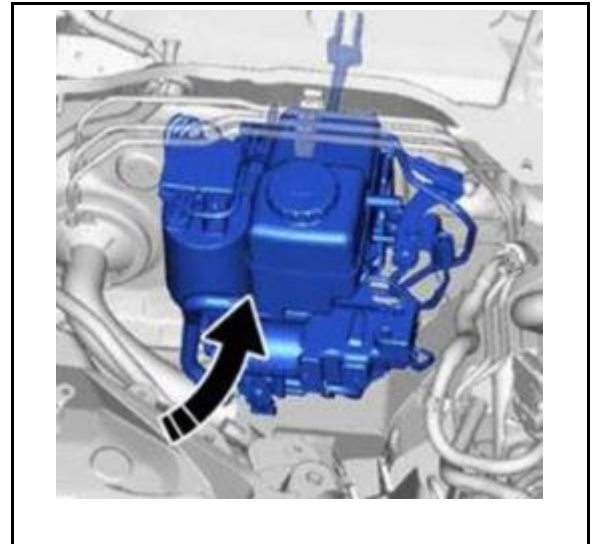
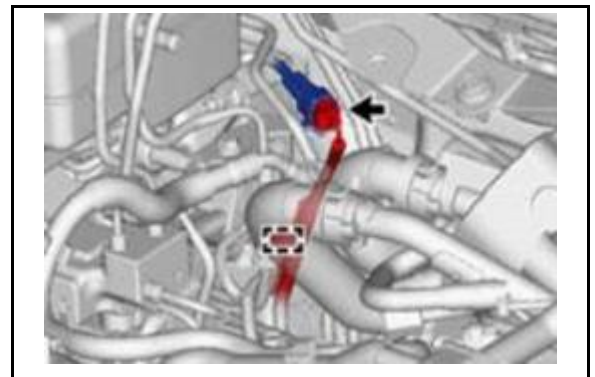


Figure 38.



Brake Squawk/Knock Noise

Repair Procedure (continued)

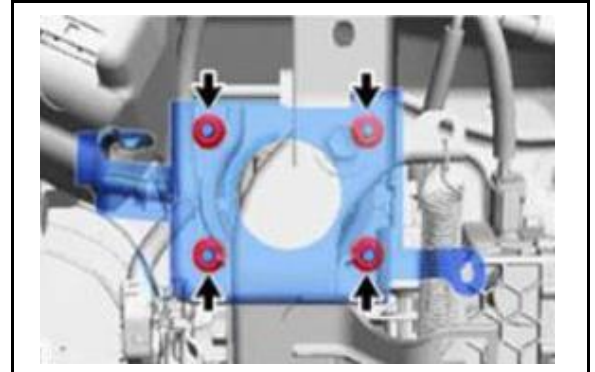
Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Installation (continued)

- C. Connect the brake fluid level warning switch connector.

Using four nuts, mount the brake master simulator cylinder assembly.

Torque: 12.7 N*m (130 kgf*cm, 113 in*lb)

Figure 39.



3. Install a push rod pin.

NOTE

Perform Repair Manual step 3.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System (Other) – “Brake System (Other): Brake Pedal: Installation”
- [2018 – 2021](#) LC 500h:
Brake – Brake System (Other) – “Brake System (Other): Brake Pedal: Installation”

4. Mount the stop lamp switch assembly.

NOTE

Perform Repair Manual steps 1 and 2.

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

- [2018 – 2021](#) LC 500:
Vehicle Exterior – Lighting (ext) – “Lighting (ext): Stop Light Switch: Installation”
- [2018 – 2021](#) LC 500h:
Vehicle Exterior – Lighting (ext) – “Lighting (ext): Stop Light Switch: Installation”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Installation (continued)

5. Install the brake pedal return spring.

NOTE

Perform Repair Manual step 6.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System (Other) – “Brake System (Other): Brake Pedal: Installation”
- [2018 – 2021](#) LC 500h:
Brake – Brake System (Other) – “Brake System (Other): Brake Pedal: Installation”

6. Install the brake actuator with bracket.

NOTE

Perform Repair Manual steps 10 and 11 to complete the following procedures.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System (Other) – “Brake System (Other): Brake Master Cylinder: Installation”
- [2018 – 2021](#) LC 500h:
Brake – Brake System (Other) – “Brake System (Other): Brake Master Cylinder: Installation”

CAUTION

When the auxiliary battery is connected, even when the ignition is OFF, “the door courtesy switch ON” and “the brake pedal operation” will make the brake control system start. During service operations of the brake system component, do NOT open/close doors, or do NOT conduct the brake pedal operation while the auxiliary battery is connected.

7. Install the heater to center register sub-duct.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Installation (continued)

8. Install No. 2 air duct.

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

- [2018 – 2021](#) LC 500:
Steering – Steering Column – “Steering Column: Steering Column Assembly: Installation”
- [2018 – 2021](#) LC 500h:
Steering – Steering Column – “Steering Column: Steering Column Assembly: Installation”

9. Install lower No. 1 instrument panel airbag assembly.

NOTE

Perform Repair Manual steps 1 – 7.

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

- [2018 – 2021](#) LC 500:
Vehicle Interior – Supplemental Restraint Systems – “Supplemental Restraint Systems: Knee Airbag Assembly (for Driver Side): Installation”
- [2018 – 2021](#) LC 500h:
Vehicle Interior – Supplemental Restraint Systems – “Supplemental Restraint Systems: Knee Airbag Assembly (for Driver Side): Installation”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster Brake Master Cylinder Assembly Installation (continued)

10. Connect the brake tube.

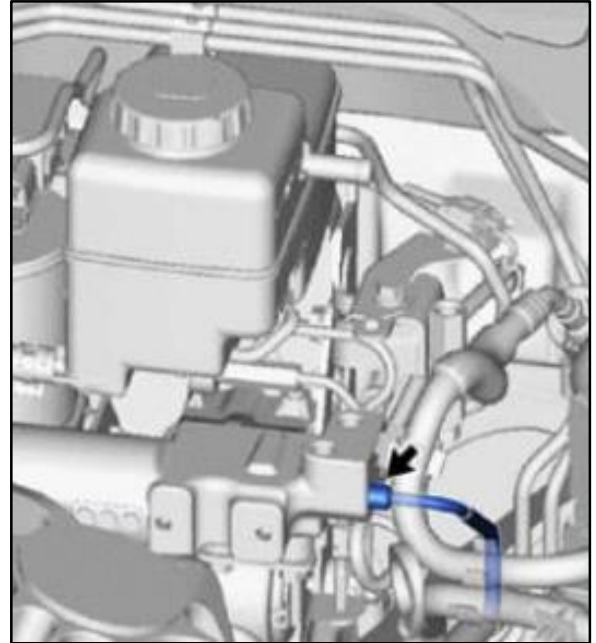
Using a union-nut wrench, connect one flare nut on the brake tube.

Torque: 15.2 N*m (155 kgf*cm, 135 in*lbf)

NOTICE

- This step prevents air from mixing into the tubes and keeps it to a minimum.
- Quickly connect **AFTER** removing the cap.
- Do **NOT** bend or damage the brake tubes.
- Do **NOT** allow debris, such as dust, to contact the brake tube connecting part.

Figure 40.



NOTE

Procedures 10 – 15 in the Repair Manual for Master Cylinder Installation **MUST** be performed **AFTER** actuator assembly installation.

HINT

- When using a torque wrench with effective length changed, determine the read value from the torque wrench.

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

- [2018 – 2021](#) LC 500:
General – Introduction – “Introduction: Repair Instruction: Precaution”
- [2018 – 2021](#) LC 500h:
General – Introduction – “Introduction: Repair Instruction: Precaution”
- When using a union-nut wrench (effective length 22 mm) + a torque wrench (effective length 162 mm):
13.4 N*m (137 kgf*cm, 119 in*lbf)

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation

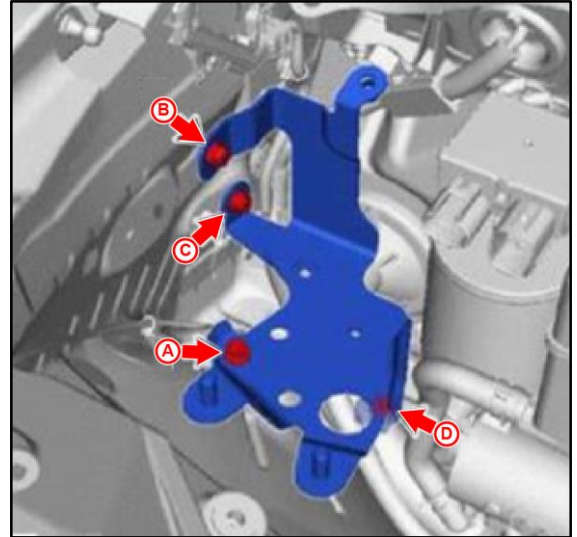
1. Mount the brake actuator bracket No. 3.

NOTE

The brake actuator bracket No. 3 is a reused part.

- A. Using four bolts, mount the brake actuator bracket No. 3 onto the body.
Torque: 11 N*m (112 kgf*cm, 97 in*lbf)
- B. Referencing Figure 41, fasten bolts in the following order: A, B, C, D.

Figure 41.



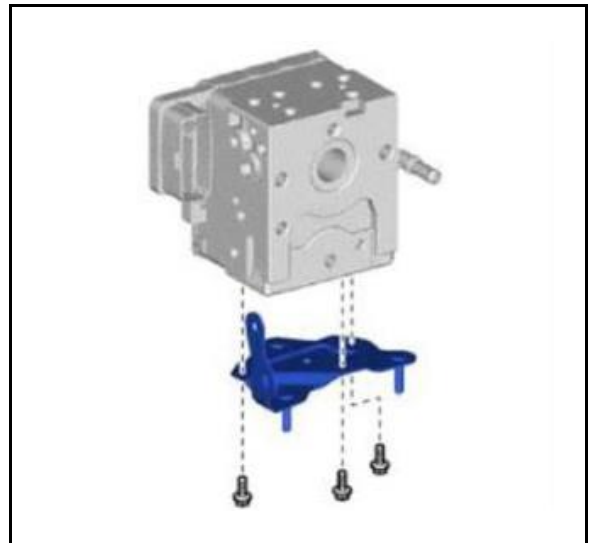
2. Mount the brake actuator bracket No. 1.
Using three bolts, mount the brake actuator bracket No. 1 onto the brake actuator assembly.

Torque: 9.3 N*m (95 kgf*cm, 82 in*lbf)

NOTE

- The bracket will be mounted onto a NEW brake actuator.
- The brake actuator bracket No. 1 is a reused part.

Figure 42.



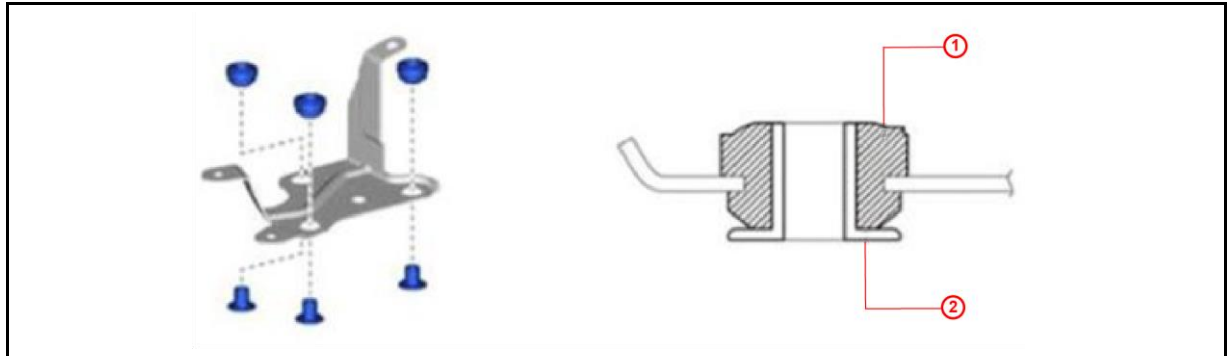
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

3. Attach the brake actuator bracket No. 2.
 - A. Attach three brake actuator bracket cushions onto the brake actuator bracket No. 2.

Figure 43.



1	Brake Actuator Bracket Cushion
2	Brake Actuator Bracket Space

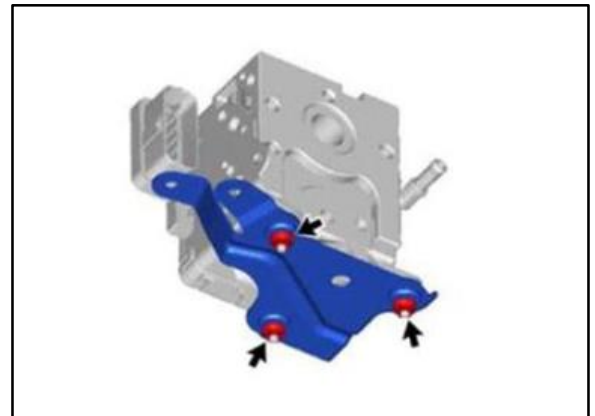
- B. Attach three bracket actuator bracket spacers to the brake actuator bracket cushions.
 - C. Using three nuts, mount the brake actuator bracket No. 2 onto the brake actuator assembly.

Torque: 9.3 N*m (95 kgf*cm, 82 in*lbf)

NOTE

The bracket actuator bracket No. 2 is a reused part.

Figure 44.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

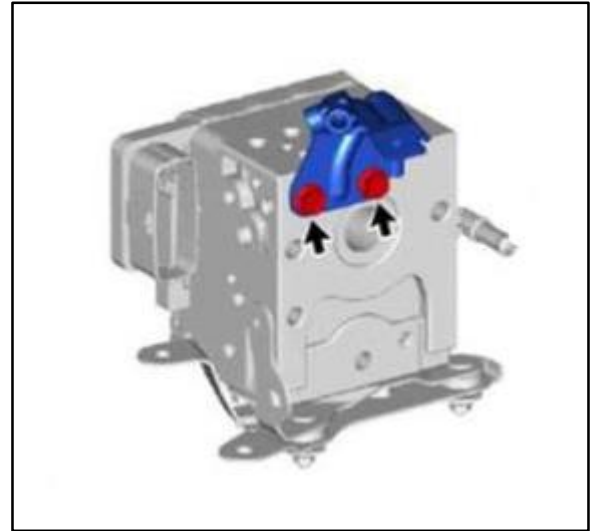
4. Attach the brake actuator way No. 1.
Using two bolts, mount the brake actuator way No. 1 onto the brake actuator assembly.

Torque: 19 N*m (194 kgf*cm, 168 in*lb)

NOTE

The actuator way No. 1 and brake actuator tube No. 3 were removed earlier as they were attached to each other. Therefore, please see more explanations in the following pages.

Figure 45.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

5. Connect the brake actuator tube No. 3.
 - A. Using a union-nut wrench, connect the brake actuator tube No. 3 to the brake actuator assembly and the brake actuator way No. 1.

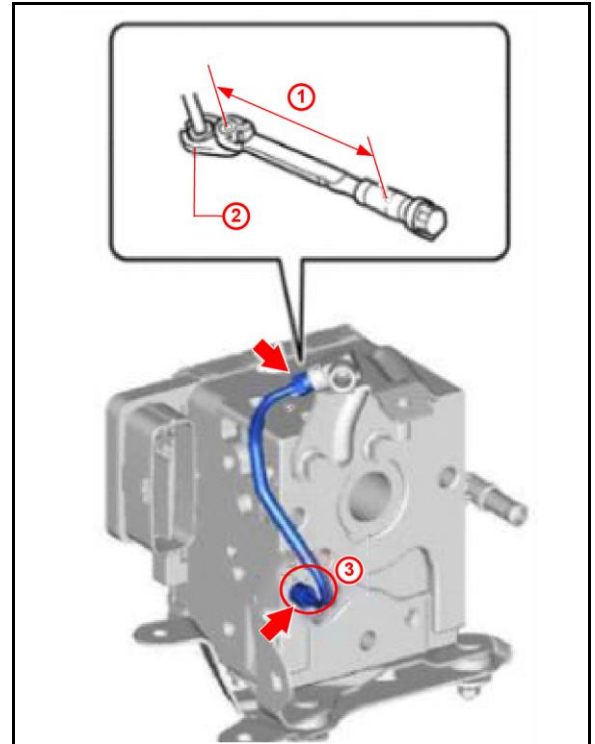
**Torque: 15.2 N*m
(155 kgf*cm, 135 in*lbf)**

NOTICE

- Do NOT bend or damage the brake actuator tube No. 3.
- Do NOT allow debris, such as dust, to get in on the brake actuator tube No. 3 connecting part.

- B. In order to eliminate as much air from remaining in the tube and connecting parts, fill the Tube No. 3 with brake fluid before connecting to the brake actuator.

Figure 46.



1	Torque Wrench Effective Length
2	Union-nut Wrench
3	Tube No. 3

NOTE

- This step protects the brake actuator assembly by preventing fluid from contacting the connector.
- The brake actuator tube No. 3 and the brake actuator way No. 1 are reused parts.
- When using a torque wrench with the effective length changed, find out the read value from the torque wrench.

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

- [2018 – 2021 LC 500:](#)
General – Introduction – “Introduction: Repair Procedure: Precaution”
- [2018 – 2021 LC 500h:](#)
General – Introduction – “Introduction: Repair Procedure: Precaution”
- When using a union-nut wrench (effective length 22 mm) and a torque wrench (effective length 162 mm):

Torque:13.4 N*m (137 kgf*cm, 119 in*lbf)

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

Figure 47. Brake Actuator Way Assembled

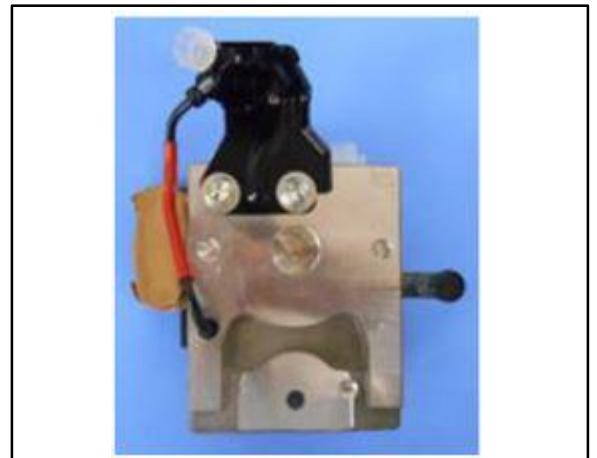


1	Brake Actuator Tube No. 3
---	---------------------------

Figure 48. New Brake Actuator



Figure 49. New Brake Actuator Assembly



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

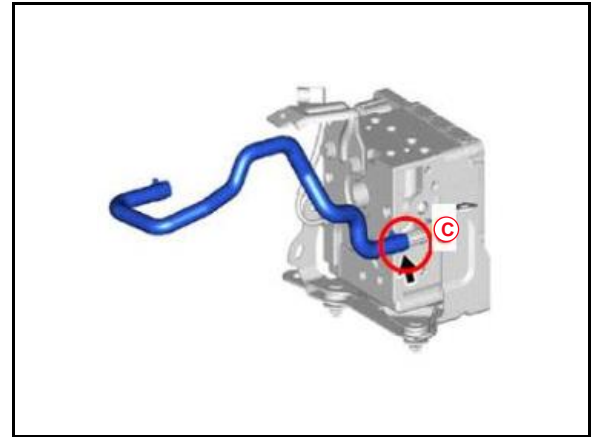
6. Connect the brake actuator hose, with the brake fluid filled inside of it, to the brake actuator assembly.

NOTE

- The brake actuator hose is a reused part.
- Prevent air from mixing into the tube (keeping it to a minimum).
- Quickly connect the tube to the assembly as soon as the cap is removed.

- A. Turn the tip of the actuator-side port upward and pour brake fluid in the port until it overflows.
- B. Turn C (shown in Figure 50) of the brake actuator hose upward and pour brake fluid in the hose. While pouring, discharge air by rubbing and tapping the hose frequently. Continue pouring until the fluid overflows and drips out from the tip of the hose and confirm there is no air coming out.
- C. Try not to spill the fluid surface on the hose tip and connect to the brake actuator assembly.

Figure 50.



Brake Squawk/Knock Noise

Repair Procedure (continued)

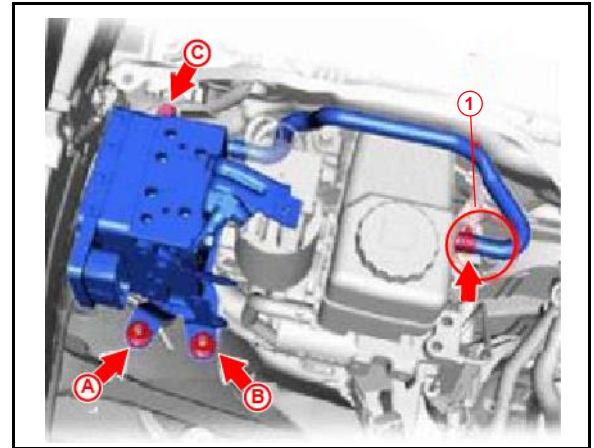
Brake Control Brake Actuator Assembly Installation (continued)

7. Mount the brake actuator assembly with bracket.
 - A. Using one bolt and two nuts, mount the brake actuator assembly with bracket.
Torque: 19 N*m (194 kgf*cm, 168 in*lbf)

NOTICE

- Fasten the bolt and nuts in the following order: A, B, C.
- Do NOT bend or damage the brake tubes.
- Do NOT allow debris, such as dust, to get on the brake tube connecting part.
- Do NOT hold the brake actuator assembly by its connector part.

Figure 51.



1 Area to Massage When Discharging Air (Root of Connecting Part)

NOTE

- Make sure to avoid the brake tubes.
- This step prevents air from mixing into the hose (keeping to a minimum). If the fluid surface of the reservoir tank is low, there is a possibility that air could go into the hose.
- When a NEW brake master cylinder assembly is delivered, the fluid level inside the reservoir tank may be low; therefore, until the procedure to rub the hose, add fluid and maintain a level that is higher than the port.

- B. Connect the “Brake Actuator Hose” to the “Brake Master Cylinder Reservoir Assembly” and secure it with a hose clamp.

NOTE

This step eliminates as much air from remaining in the tube and connecting part.

- C. AFTER connecting the brake actuator hose to the brake master cylinder reservoir assembly, discharge air from the hose.
- D. AFTER connecting the hose, firmly massage the hose with fingers 50 times and discharge air from the connecting part to the reservoir tank.

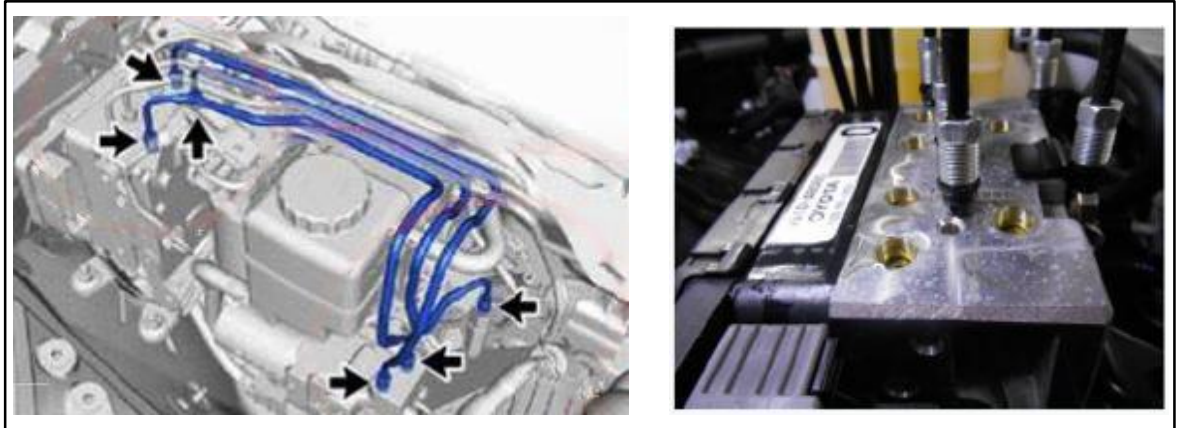
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

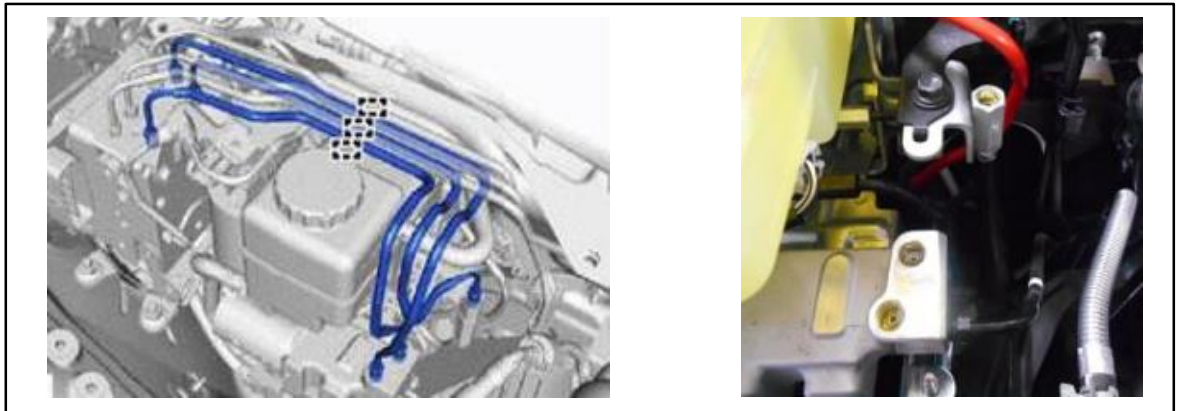
8. Install the brake tube.
 - A. Remove the rubber caps and connect the tubes.

Figure 52.



- B. Temporarily tighten the six flare nuts on the brake tube.

Figure 53. Before Fluid Is Poured Into Each Port



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

C. Engage the lower three brake tubes using the brake tube clamp.

NOTE

- This step eliminates as much air from remaining in the tube and connecting part.
- When installing the brake tubes, connect them with the fluid filled in the ports on the brake master cylinder with simulator cylinder assembly side, as well as in the ports on the brake actuator assembly.
- Remove the rubber caps of the tubes one at a time when each tube is connected.

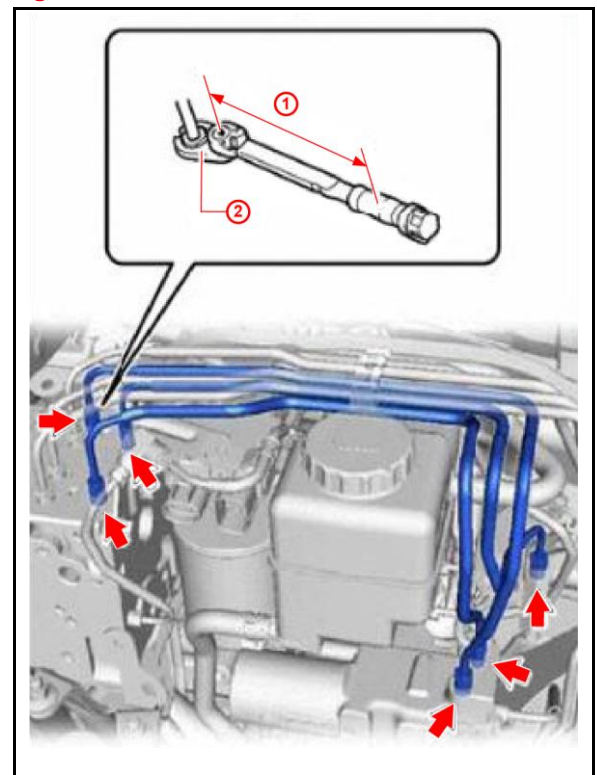
D. Using a union-nut wrench, permanently tighten the six flare nuts on the brake tube.

Torque: 15.2 N*m (155 kgf*cm, 135 in*lbf)

NOTE

- When using a torque wrench with the effective length changed, find out the read value from the torque wrench. Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500: *General – Introduction – “Introduction: Repair Procedure: Precaution”*
 - [2018 – 2021](#) LC 500h: *General – Introduction – “Introduction: Repair Procedure: Precaution”*
- When using a union-nut wrench (effective length 22 mm) and a torque wrench (effective length 162 mm):
Torque: 13.4 N*m (137 kgf*cm, 119 in*lbf)

Figure 54.



1	Torque Wrench's Effective Length
2	Union-nut Wrench

Brake Squawk/Knock Noise

Repair Procedure (continued)

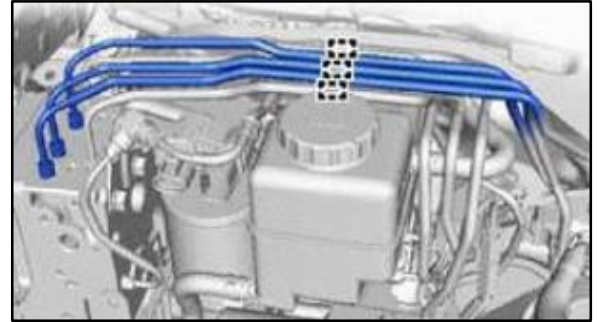
Brake Control Brake Actuator Assembly Installation (continued)

9. Connect the brake tube.
 - A. Engage the upper three brake tubes with a clamp.

NOTE

- This step eliminates as much air from remaining in the tubes and connecting parts and fills the actuator with brake fluid.
- When installing the brake tubes, connect them with the fluid filled in the port on the brake actuator assembly side.

Figure 55.



- B. Using one bolt, connect the brake actuator tube no. 2.
Torque: 15.2 N*m (155 kgf*cm, 135 in*lb)

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

- C. Using a union-nut wrench, permanently tighten the four flare nuts on the brake tubes.
Torque: 15.2 N*m (155 kgf*cm, 135 in*lbf)

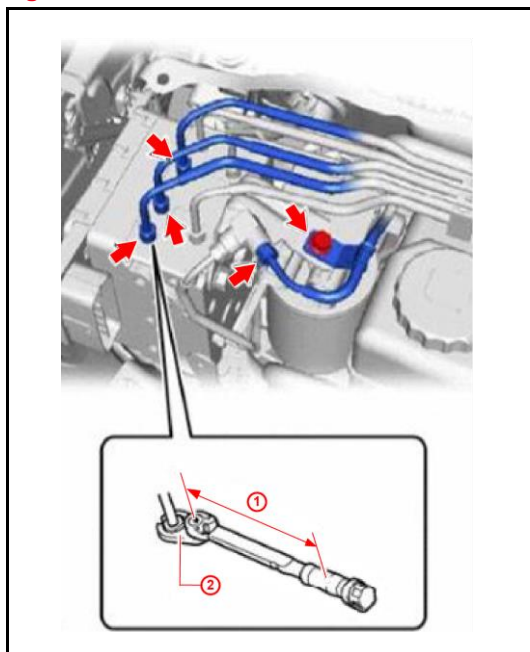
NOTE

- When using a torque wrench with the effective length changed, determine the read value from the torque wrench.
 Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021 LC 500](#):
General – Introduction – “Introduction: Repair Procedure: Precaution”
 - [2018 – 2021 LC 500h](#):
General – Introduction – “Introduction: Repair Procedure: Precaution”
- When using a union-nut wrench (effective length 22 mm) and a torque wrench (effective length 162 mm):
Torque: 13.4 N*m (137 kgf*cm, 119 in*lbf)

NOTICE

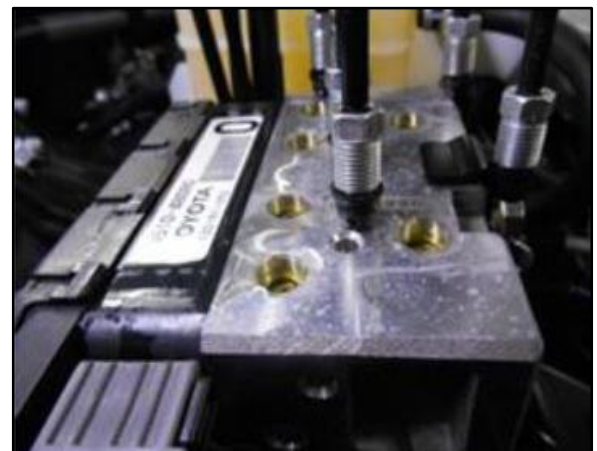
- Do NOT bend or damage the brake tubes.
- Do NOT allow debris, such as dust, to get on the brake tube connecting parts.

Figure 56.



1	Torque Wrench's Effective Length
2	Union-nut Wrench

Figure 57.



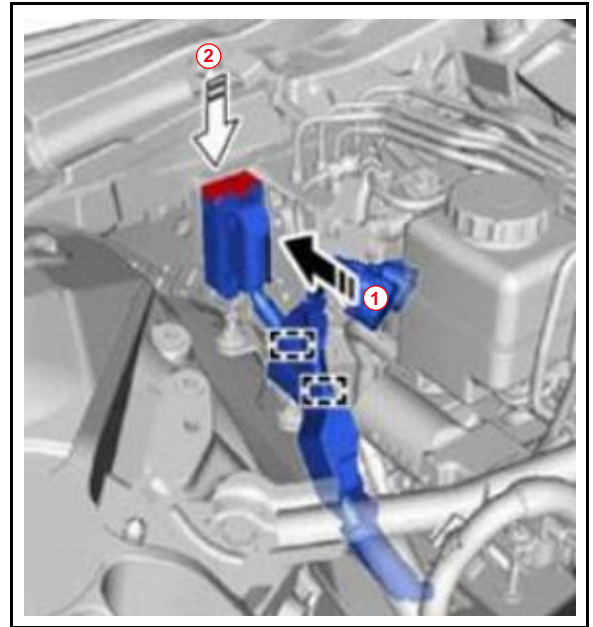
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

10. Connect the wire harness.
 - A. Put two clips on the wire harness.
 - B. Connect the brake actuator connector to the actuator assembly.
 - C. Press down the lock lever of the brake actuator connector and lock.

Figure 58.



1	Direction to Connect
2	Direction to Lock

11. Install the relay block.

NOTE

Perform Repair Manual step 11 – 12.

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

- [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Installation”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

12. Install fender apron brace sub-assembly LH.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Installation”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Installation”

13. Install cowl top ventilator louver sub-assembly.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Vehicle Exterior – Wiper/Washer – “Wiper / Washer: Front Wiper Motor: Installation”
 - [2018 – 2021](#) LC 500h:
Vehicle Exterior – Wiper/Washer – “Wiper / Washer: Front Wiper Motor: Installation”

14. Install radiator support to frame seal RH.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500h:
Engine/Hybrid System – Intake/Exhaust – “8GR-FXS (Intake / Exhaust): Exhaust Manifold: Installation”

15. Connect the auxiliary battery (–) terminal.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Power Source/Network – Battery/Charging – “2UR-GSE (Battery / Charging): Battery: Installation”
 - [2018 – 2021](#) LC 500h:
Power Source/Network – Battery/Charging – “8GR-FXS (Battery / Charging): Auxiliary Battery: Installation”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

16. Install No. 2 deck board.

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

- [2018 – 2021](#) LC 500:
Power Source/Network – Battery/Charging – “2UR-GSE (Battery / Charging): Battery: Installation”
- [2018 – 2021](#) LC 500h:
Power Source/Network – Battery/Charging – “2UR-GSE (Battery / Charging): Battery: Installation”

17. Perform brake system air bleeding.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other): Brake Fluid: Bleeding”
- [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other): Brake Fluid: Bleeding”

18. Inspect/adjust the brake fluid amount.

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

- [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other) – Brake Fluid: On-Vehicle Inspection”
- [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other) – Brake Fluid: On-Vehicle Inspection”

19. Perform the Linear Valve Offset Learning.

When the brake actuator assembly is replaced, perform the Linear Valve Offset Learning.

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

- [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”
- [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

20. Delete the DTCs.

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

- [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”
- [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”

NOTE

When attaching/detaching the auxiliary battery terminal, there are functions that complete learning by using each system.

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

- [2018 – 2021](#) LC 500:
General – Maintenance – “Maintenance: Battery: Installation”
- [2018 – 2021](#) LC 500h:
General – Maintenance – “Maintenance: Auxiliary Battery: Installation”

21. Inspect DTC outputs.

When a DTC is output, perform troubleshooting of the applicable DTC.

NOTE

Conduct Installation Procedure 10 – 15 of the Brake Master Cylinder Assembly in the manual.

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

- [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Diagnostic Trouble Code Chart”
- [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Diagnostic Trouble Code Chart”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

22. Attach the brake actuator assembly with bracket.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Installation”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Brake Actuator: Installation”

23. Perform brake system air bleeding.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other): Brake Fluid: Bleeding”
 - [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other): Brake Fluid: Bleeding”

24. Inspect the brake pedal.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other): Brake Pedal: Adjustment”
 - [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other): Brake Pedal: Adjustment”

25. Inspect for brake fluid leakage.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake System – “Brake System (Other): Brake Fluid: On-Vehicle Inspection”
 - [2018 – 2021](#) LC 500h:
Brake – Brake System – “Brake System (Other): Brake Fluid: On-Vehicle Inspection”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

26. ECU data reading.

NOTE

When connecting/disconnecting the brake actuator tube No. 2, check and confirm if the brake fluid leaks from the connecting part of the brake actuator tube No. 2 by monitoring the accumulator pressure sensor output value in the brake actuator assembly. It is difficult to check the brake fluid leakage at the connecting part of the brake actuator tube No. 2 while it is mounted.

- A. While the ignition is OFF, connect the Techstream to the DLG3.
- B. Turn the ignition ON.
- C. Turn Techstream ON.
- D. From the Techstream menu, select *System Select Menu – Chassis – ABS-VSC-TRC – Data Monitor* and monitor the accumulator pressure sensor.
- E. Read the value of accumulator pressure sensor in the data monitor.

Table 4.

ITEM NAME	ITEM NAME COMMENT	INSPECTION CONDITION	REFERENCE VALUE	INSPECT ITEMS WHEN ABNORMAL
Accumulator Pressure Sensor	It indicates Accumulator Pressure Sensor Output Value.	Depress the brake pedal four or five times, start the pump motor, then stop the motor and do NOT depress the brake.	2.6 to 3.8V	Actuator System

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

27. Wait for 30 seconds without operating the brake pedal and confirm that there is no decrease in the accumulator pressure sensor output value.

Standard:

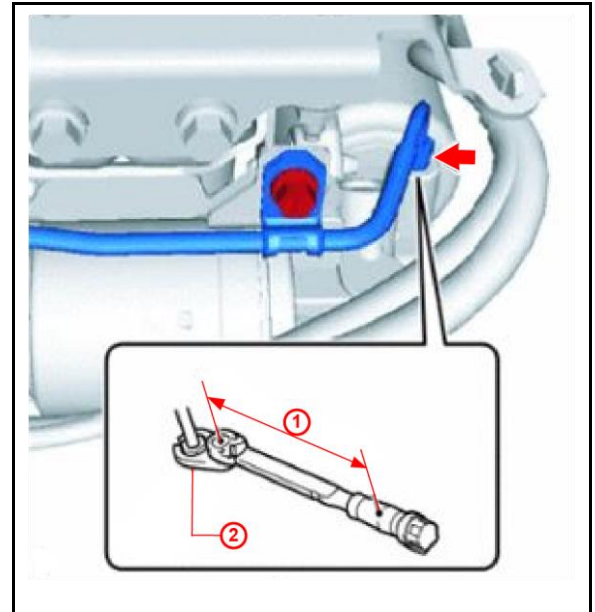
Accumulator pressure sensor's output voltage drops 0.2V or less or 30 seconds.

If the accumulator pressure sensor value decreases below the standard value, it is suspected that there is brake fluid leakage from the connection part of the brake actuator tube No. 2; therefore, remove the brake actuator and brake booster pump assembly once again, then remove the brake actuator tube No. 2 and inspect the connection part, and re-install.

Is the accumulator pressure sensor value decreased below the standard value?

- **YES** — Continue to step 28.
- **NO** — Check for any leaks, correct, and reconfirm accumulator pressure by repeating step 27.

Figure 59.



1	Torque Wrench's Effective Length
2	Union-nut Wrench

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake Control Brake Actuator Assembly Installation (continued)

28. Remove the brake actuator and the brake booster assembly.
Then, remove the brake actuator tube No. 2 again, inspect the connection part, and reinstall tube No. 2.

Torque: 15.2 N*m (155 kgf*cm, 135 in*lbf)

NOTE

When using a torque wrench with the effective length changed, determine a read value from the torque wrench.

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

- [2018 – 2021](#) LC 500:
General – Specifications – “Specifications: Brake Control / Dynamic Control Systems: Torque Specifications”
- [2018 – 2021](#) LC 500h:
General – Specifications – “Specifications: Brake Control / Dynamic Control Systems: Torque Specifications”

When using a union-nut wrench (effective length 22 mm) and a torque wrench (effective length 162 mm).

13.4 N*m (137 kgf*cm, 119 in*lbf)

29. Inspect the brake master cylinder.
Refer to TIS, applicable model and model year Repair Manual:
- [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Check for Intermittent Problems”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Check for Intermittent Problems”
30. Master cylinder pressure sensor check.
Refer to TIS, applicable model and model year Repair Manual:
- [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Test Mode Procedure”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Test Mode Procedure”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding

Table 5.

PARTS TO REPLACE/ATTACH/DETACH	PROCEDURE TO REFER TO
Flexible Hose (Front and Back)	Brake Line Air Bleeding
Disk Brake Cylinder Assembly (Front and Back)	
Brake Actuator Assembly	Brake System Air Bleeding
Brake Master Cylinder Reservoir Assembly	
Brake Stroke Simulator Cylinder Assembly	
Brake Master Cylinder Sub-assembly	

- Using Techstream, perform the following air bleeding procedure.

NOTICE

- Perform air bleeding with the shift lever in (P) Park and the parking brake applied.
 - Brake fluid may overflow due to brake fluid released from the brake actuator assembly. Do NOT pour by holding the brake fluid bottle straight above the reservoir filling port.
 - During the air bleeding operation, constantly add the brake fluid to the brake master cylinder reservoir assembly to maintain fluid level between MIN and MAX.
 - If the pump motor starts with air mixed in the brake actuator hose (the hose between the brake master cylinder reservoir assembly and brake booster pump assembly), the air could get caught in the brake booster pump assembly, and consequently, air bleeding will be difficult. When the auxiliary battery is connected, even when the ignition is OFF, “the door courtesy switch ON” and “the brake pedal operation” will make the brake control system start; therefore, when conducting any operations that could possibly mix air into the brake actuator hose, make sure to disconnect two brake booster pump connectors in advance.
 - While air bleeding the brake fluid, a buzzer may sound due to the accumulator pressure reduction; however, it is not abnormal, therefore, continue the operation.
 - DTCs such as ABS Motor Relay Malfunction or Pressure Sensor Malfunction may be stored when air bleeding the brake fluid. When there are instructions during or after the air bleeding, delete the DTC(s).
 - Do NOT allow the brake fluid to contact ANY coated surfaces, such as the vehicle body. If fluid contacts a coated surface, wipe off immediately and wash off with water.
 - Do NOT perform air bleeding under negative pressure using a device such as a Vacula.*
 - Make sure to bleed air from the brake system as the following attachment, detachment, or replacement procedures include actuator assembly attachment/detachment.
 - Brake stroke stimulator cylinder assembly
 - Brake master cylinder sub-assembly
- When turning the ignition ON to prevent a dead battery, connect the battery charger to the auxiliary battery and make it to a charging state.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

NOTE

*An ECB (Electronic Control Brake System) has a complicated oil passage. There is a risk that gas dissolved into the brake fluid may vaporize due to a pressure reduction and consequently generate air bubbles.

- A. The brake actuator assembly is replaced. Initialize the correction value of the linear valve.
- B. Turn the ignition ON.
- C. Shift to the (P) Park position.
- D. Turn the parking brake ON.
- E. Turn the ignition OFF.
- F. Connect Techstream to the DLC3 and turn the ignition ON.
- G. From the Techstream screen, select *CHASSIS – ABS-VSC-TRC – Utility – Reset Memory*.
- H. Select Delete the Back-Up Memory.

NOTICE

- Once “Delete the Back-Up Memory” is performed, 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, a 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.

- I. Turn the ignition OFF and disconnect Techstream.

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

2. Perform brake system air bleeding.

CAUTION

The Techstream **MUST** be used for brake system air bleeding. If air bleeding is performed without Techstream, the operation will be incomplete and may lead to failures and accidents.

- A. Remove the four wheels.

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

- [2018 – 2021](#) LC 500:
General – Maintenance – “Maintenance: Tire and Wheel: Removal”
- [2018 – 2021](#) LC 500h:
General – Maintenance – “Maintenance: Tire and Wheel: Removal”

- B. Remove radiator support to frame seal RH.

NOTE

- This step **ONLY** applies to LC 500h vehicles.
- Perform Repair Manual step 29.

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

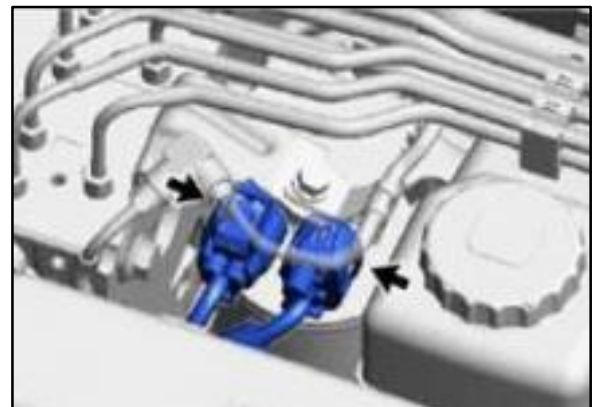
- [2018 – 2021](#) LC 500h:
Engine/Hybrid System – Intake/Exhaust – “8GR-FXS Intake / Exhaust: Exhaust Manifold: Installation”

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

NOTE

If the connectors are already disconnected, this step is **NOT** necessary.

Figure 60.



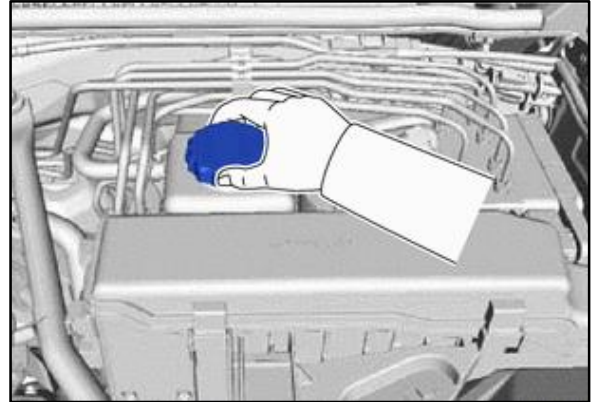
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

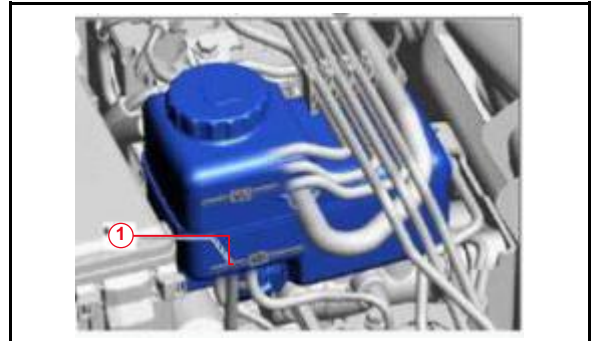
- D. Remove the brake master cylinder reservoir filler cap assembly.

Figure 61.



- E. Adjust the brake fluid amount so that the brake fluid level in the brake master cylinder reservoir assembly reaches the MIN level.

Figure 62.



1	MIN Level
----------	------------------

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

- F. Once the ignition is OFF, connect the Techstream to the DLC 3 Connector.
- G. Turn the ignition ON.
- H. Turn Techstream ON.
- I. From the Techstream screen, select Chassis – ABS-VSC-TRC – Operation Support – Electronic Control Brake Support – Zero Down.
- J. Perform accumulator zero down.

NOTE

Using Techstream to perform the accumulator zero down causes the pressure-accumulated brake fluid in the accumulator back to the brake master cylinder reservoir assembly.

- K. Confirm the buzzer sound, then turn the ignition OFF.
- L. Add brake fluid to the brake master cylinder reservoir assembly to the level between MIN and MAX.
- M. Turn the ignition ON.
- N. Turn Techstream ON and select *Chassis – ABS-VSC-TRC – Operation Support – Air-Bleeding*.
- O. Select “Actuator has been removed” and bleed the brake system by following the instructions on Techstream.

CAUTION

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

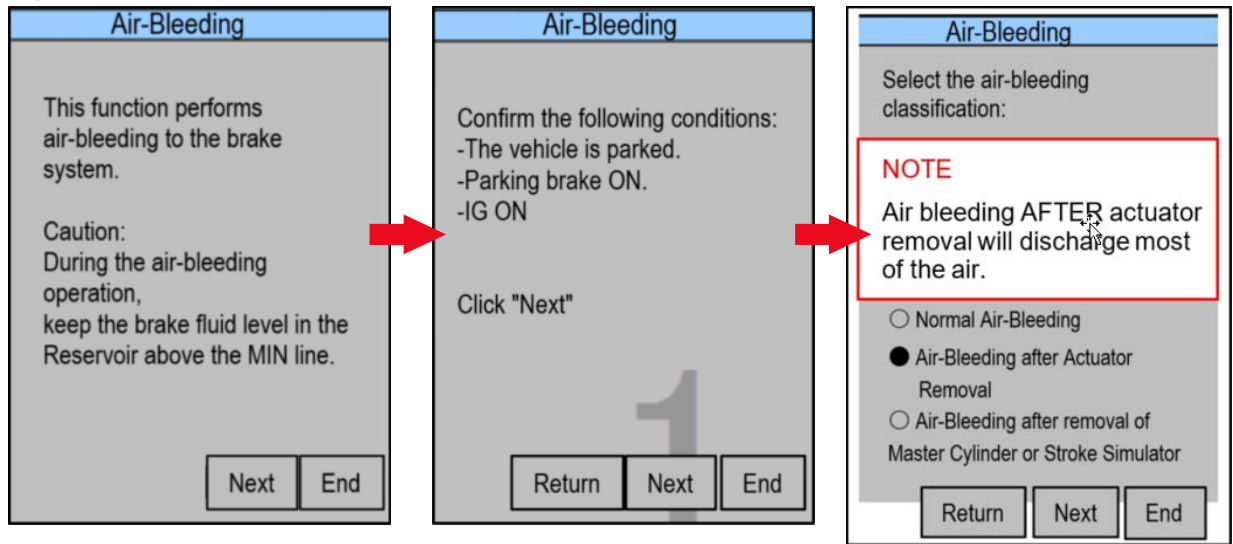
Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

3. Perform air bleeding after actuator removal per the Techstream instructions below.

Figure 63.



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

Procedure Change (Refer to Figure 64)

- A. Drain the fluid until the fluid level in the reservoir tank reaches MIN level. (Conduct pedaling while the bleeder plug is open.)
- B. 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.
- C. Discharge the brake fluid by pedaling (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.

Figure 64.

Air-Bleeding

[work name]

Conduct the following:

1. Turn IG OFF.
2. Disconnect 2 Brake Booster Pump Connectors.

Reference:
If the connectors are already disconnected, this procedure is not necessary.

3. Turn IG ON.

Click "Next"

Return Next End

Air-Bleeding

[work name]

Conduct the following:

1. Connect a vinyl tube to the bleeder plug in the front right wheel.
2. After depressing the brake pedal a few times, loosen the bleeder plug while the brake pedal is depressed.

2

Click "Next"
Procedure 3 will be displayed.

Return Next End

Air-Bleeding

[work name]

3. Once the brake fluid stops flowing,

NOTE

Do NOT complete procedures 2 and 3. Complete the Procedure Change above.

Return Next End

Brake Squawk/Knock Noise

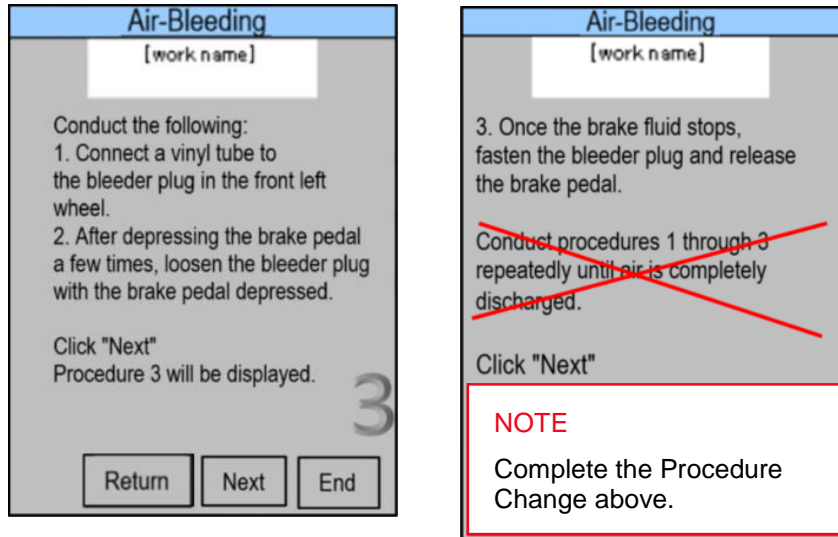
Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

Procedure Change (Refer to Figure 65)

Steps 1 – 3 MUST be repeated 20 times.

Figure 65.



Brake Squawk/Knock Noise

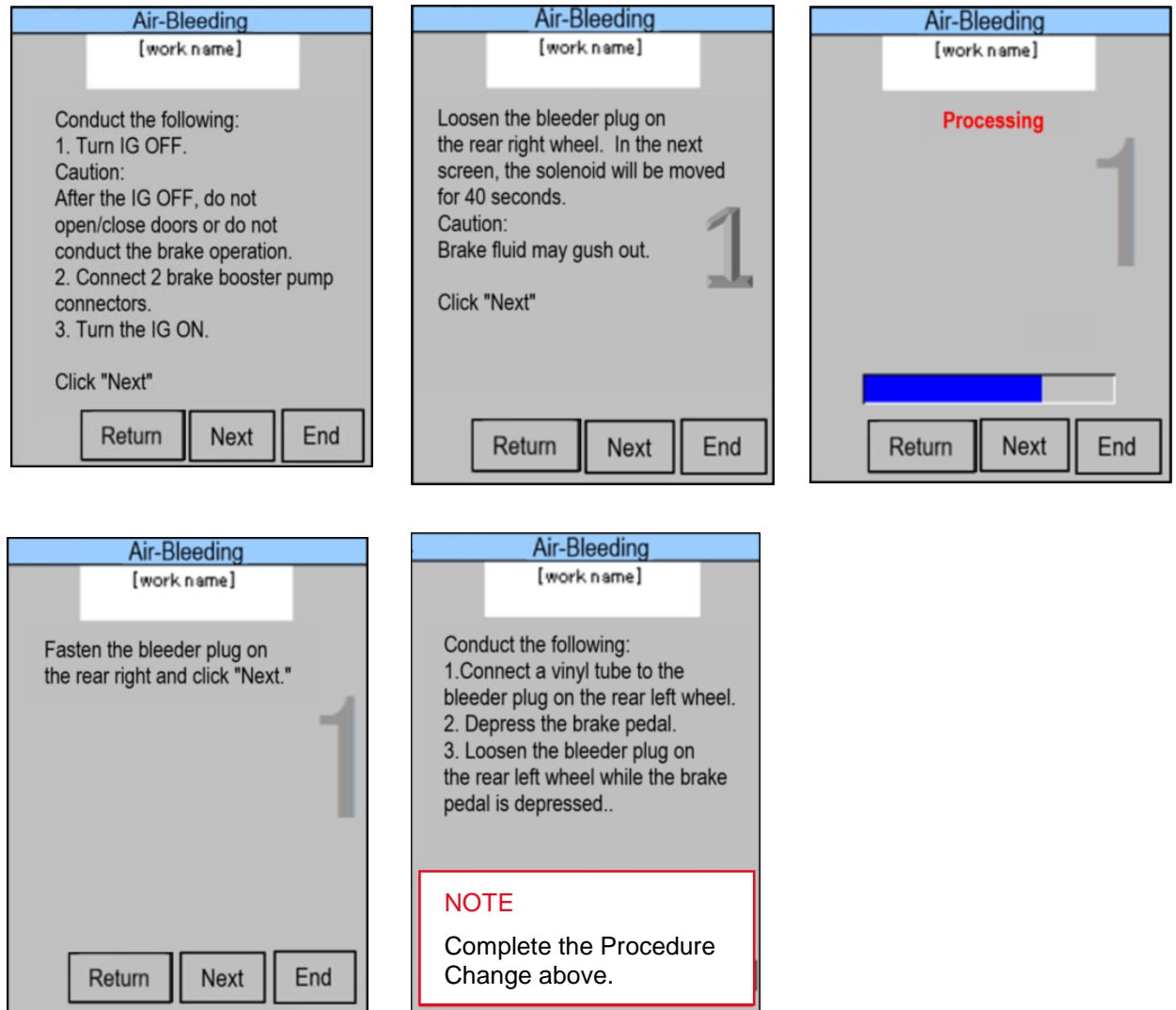
Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

Procedure Change (Refer to Figure 66)

AFTER discharging brake fluid for 30 seconds continuously, fasten the bleeder plug and release the brake pedal.

Figure 66.

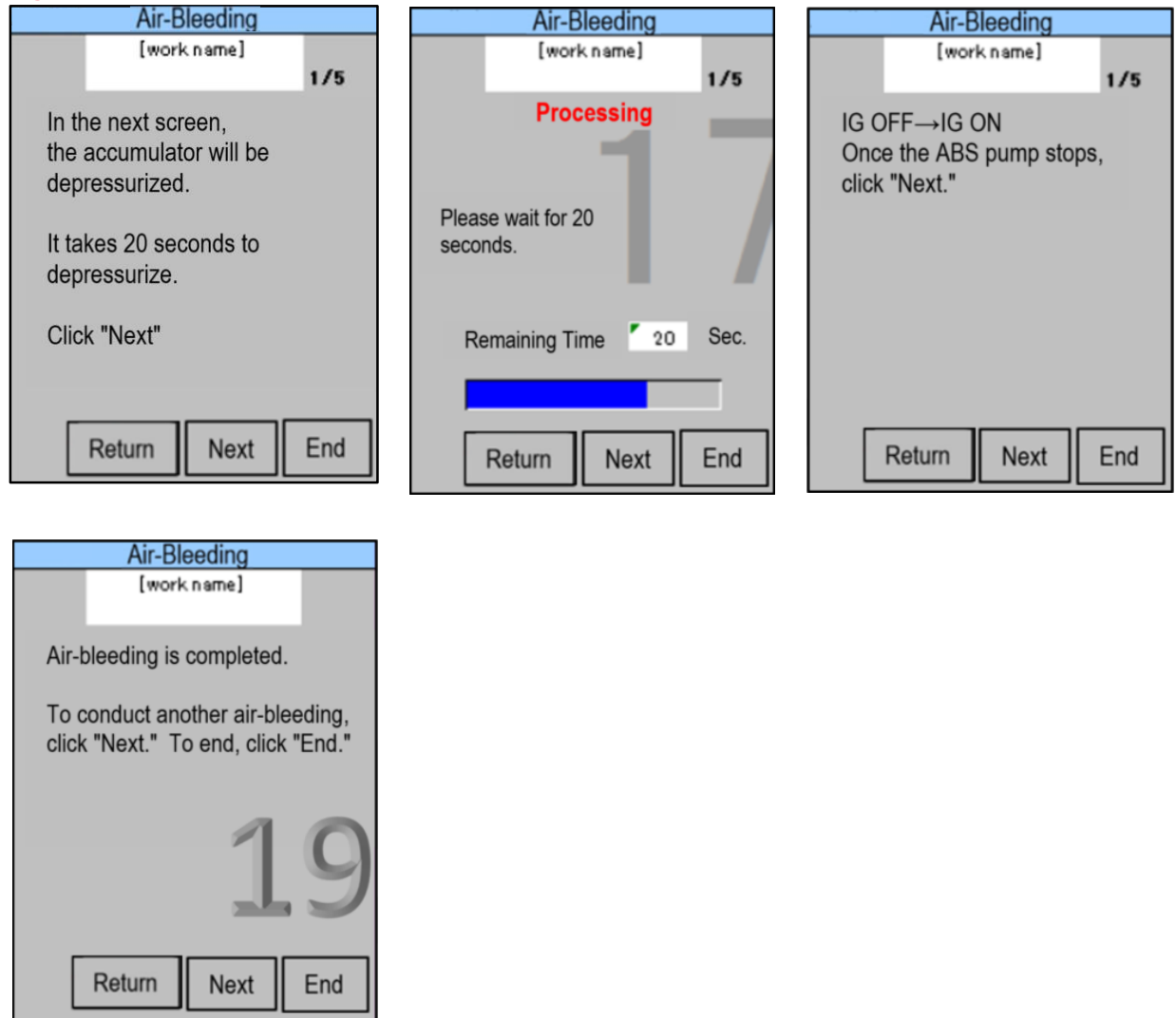


Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

Figure 66 (continued)



4. Tighten the bleeder plugs once the air-bleeding is completed.
Torque: 10.8 N*m (110 kgf*cm, 95 in*lb)

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

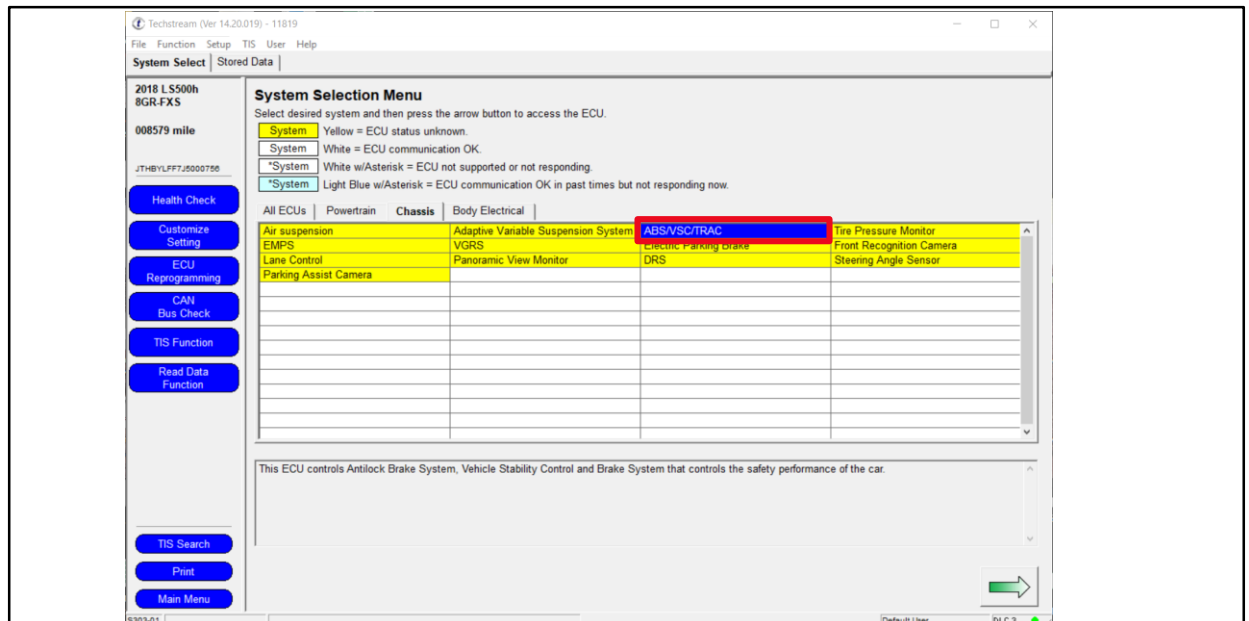
5. Perform the Techstream Active Test to forcefully move the valve in the actuator to complete air-bleeding by entering the following menus in Techstream:

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

NOTE

Perform the above operation five times.

Figure 67. Techstream Screen Image (Chassis – ABS-VSC-TRC)

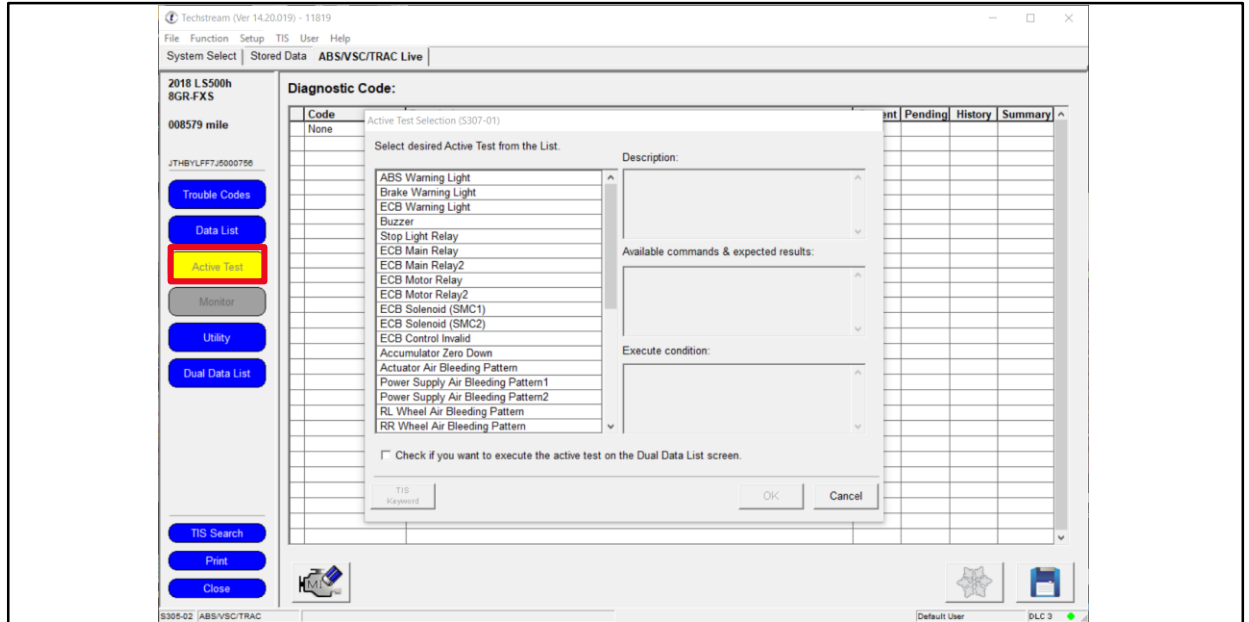


Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

Figure 68. Techstream Screen Image (Active Test)



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

Figure 69. Techstream Screen Image (Perform Actuator Pattern)

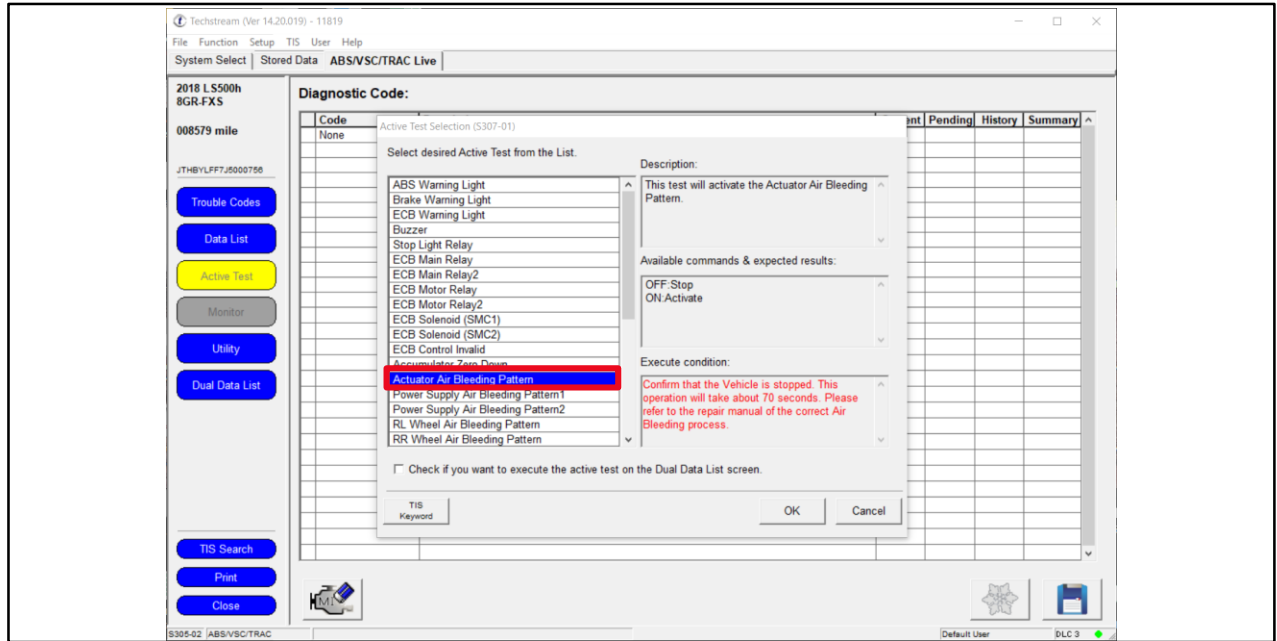
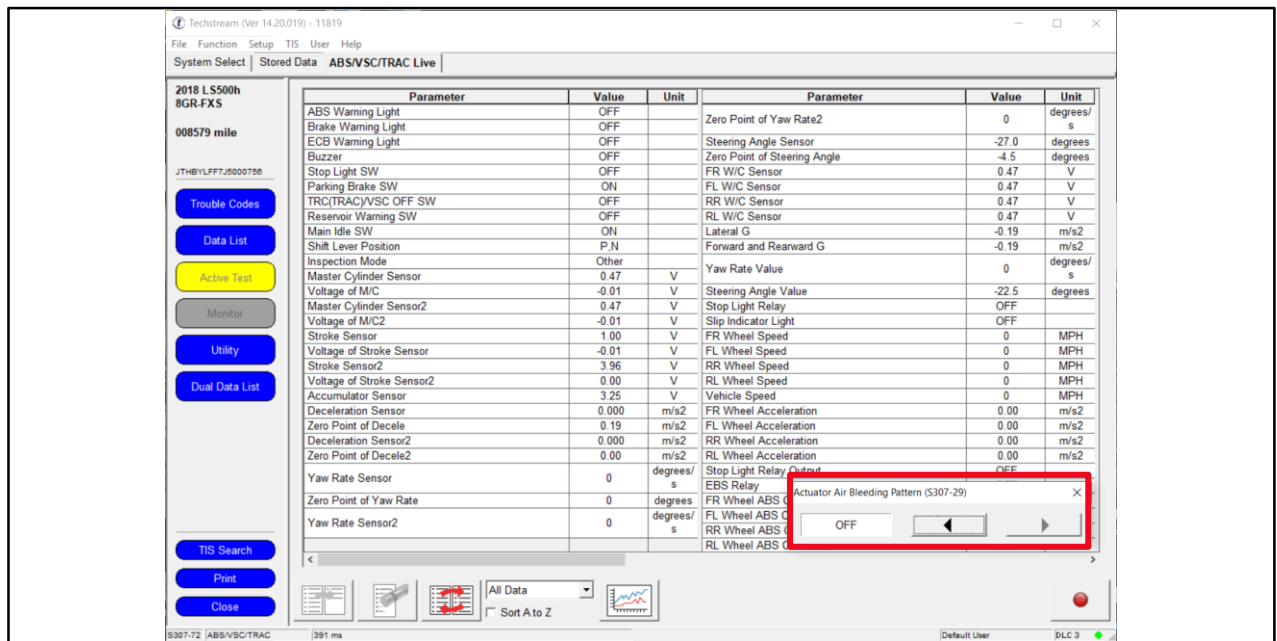


Figure 70. Techstream Screen Image (Execute)



Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

6. Delete DTCs.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: DTC Check / Clear”
7. Turn the Techstream power OFF.
8. Turn the IG OFF.
9. Disconnect the Techstream from the DLC3.
10. Inspect for brake fluid leakage.
11. Inspect and adjust the amount of the brake fluid.
12. Install the brake master cylinder reservoir filler cap assembly.
13. Install radiator support to frame seal RH.

NOTE

- This step ONLY applies to LC 500h vehicles.
- Perform Repair Manual step 29.

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

- [2018 – 2021](#) LC 500h:
Engine/Hybrid System – Intake/Exhaust – “8GR-FXS Intake / Exhaust: Exhaust Manifold: Installation”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

14. 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:

- [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”
15. Perform the initialization procedure AFTER brake component replacement.
Refer to TIS, applicable model and model year Repair Manual:
 - [2018 – 2021](#) LC 500:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”
 - [2018 – 2021](#) LC 500h:
Brake – Brake Control/Dynamic Control System – “Brake Control / Dynamic Control Systems: Electronically Controlled Brake System: Initialization”

Brake Squawk/Knock Noise

Repair Procedure (continued)

Brake System/Pedal/Brake Booster/Brake Fluid/Air Bleeding (continued)

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

17. Connect Techstream and check the skid control ECU calibration for the latest calibration ID. Refer to the Calibration Information section. Is the calibration ID listed the latest skid control ECU calibration?
 - **YES** — Go to step 19.
 - **NO** — Continue to step 18.

18. Follow the procedures outlined in Service Bulletin No. [L-SB-0001-18](#) Techstream ECU Flash Reprogramming Procedure and flash the skid control ECU with the NEW calibration file update.

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 tool, refer to the [DCA-8000 Instruction Manual](#) located at *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

Certain options may become unavailable during the software update. Perform a 12V battery reset on the vehicle AFTER the software update completes.

19. Start the engine and warm it up to normal operating temperature.

20. Test-drive the vehicle to confirm proper operation.