

HVAC Servo Motor Malfunction

Service Category Vehicle Interior

Section Heating/Air Conditioning

Market USA

Toyota Supports
 ASE Certification 

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2016 - 2017	Land Cruiser	

Introduction

Some 2016 – 2017 model year Land Cruiser vehicles may exhibit one of the following HVAC conditions:

- Uneven temperature or air flow between the vents.
- Little or no air flow from the vent(s).
- Improper MODE control function.

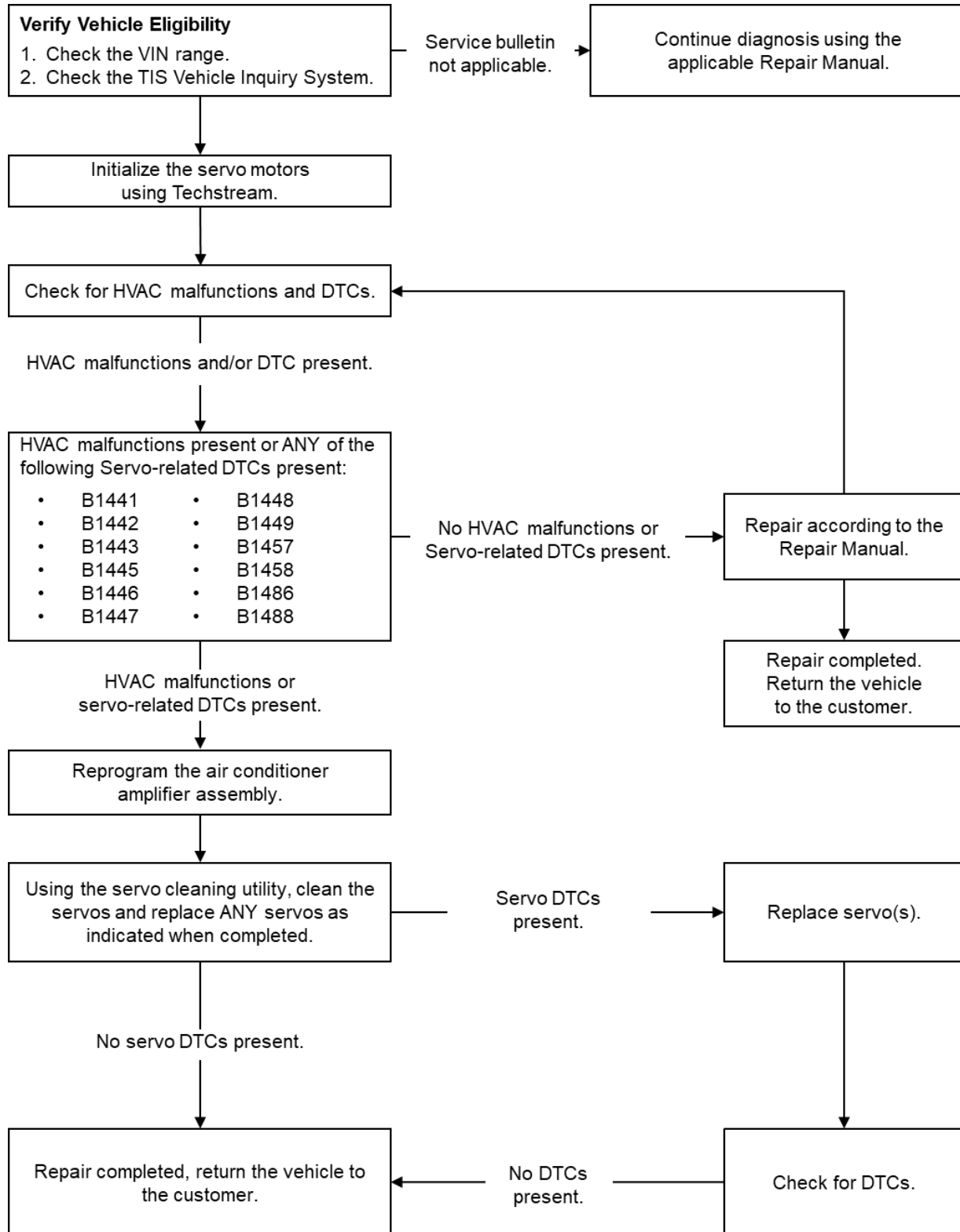
Additionally, some vehicles may store one or more of the following HVAC servo Diagnostic Trouble Codes (DTCs):

- B1441 – Air Mix Damper Control Servo Motor Circuit (Passenger Side).
- B1442 – Air Inlet Damper Control Servo Motor Circuit.
- B1443 – Air Outlet Damper Control Servo Motor Circuit.
- B1445 – Passenger Side Cool Air Bypass Damper Control.
- B1446 – Air Mix Damper Control Servo Motor Circuit (Driver Side).
- B1447 – Rear Air Mix Damper Control Servo Motor Circuit (Driver Side).
- B1448 – Passenger Side Face Servo Motor Circuit.
- B1449 – Rear Air Outlet Damper Control Servo Motor Circuit.
- B1457 – Driver Side Air Outlet Damper Control Servo Motor Circuit.
- B1458 – Passenger Side Air Outlet Damper Control Servo Motor Circuit.
- B1486 – Driver Side Air Outlet Damper Control Servo Motor Circuit.
- B1488 – Rear Air Mix Damper Control Servo Motor Circuit (Front Passenger).

Follow the procedures in this bulletin to address these conditions.

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Operation Flowchart



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Production Change Information

This bulletin applies to 2016 – 2017 Land Cruiser vehicles produced **BEFORE** the Production Change Effective VIN shown below.

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
Land Cruiser	URJ200L	4WD	JTMCY7AJ#H4059943

Warranty Information

Table 1. Reprogram and Redistribute Grease

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC1971	Reprogram and Redistribute Grease Only	0.6	88650-#####*	72	41

*Warranty claim MUST be submitted with the correct ten-digit OFF for the vehicle being repaired by searching Air Conditioning, Amplifier (88650) and Servo Sub-assy, Damper (87106) in the Electronic Parts Catalog using the VIN filter.

Table 2. Reprogram, Redistribute Grease, and Servo Replacement

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC1972	Reprogram and Redistribute Grease, and R & R IP and One Front Servo/Module	5.1	87106-#####*	72	41
AC1973	Reprogram and Redistribute Grease, and R & R IP and Two Front Servos/Modules	5.2			
AC1974	Reprogram and Redistribute Grease, and R & R Rear Trim Panels and One Rear Servo/Module	1.3			
AC1975	Reprogram and Redistribute Grease, and R & R Rear Trim Panels and Two Rear Servos/Modules	1.4			
AC1976	Reprogram and Redistribute Grease, R & R IP and One Front Servo/Module, and R & R Rear Trim Panels and One Rear Servo/Module	5.8			
AC1977	Reprogram and Redistribute Grease, R & R IP and One Front Servo/Module, and R & R Rear Trim Panels and Two Rear Servos/Modules	5.9			
AC1978	Reprogram and Redistribute Grease, R & R IP and Two Front Servos/Modules, and R & R Rear Trim Panels and one Rear Servo/Module	5.9			

*Warranty claim MUST be submitted with the correct ten-digit OFF for the vehicle being repaired by searching Air Conditioning, Amplifier (88650) and Servo Sub-assy, Damper (87106) in the Electronic Parts Catalog using the VIN filter.

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Warranty Information (continued)
Table 2. Reprogram, Redistribute Grease, and Servo Replacement (continued)

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC1979	Reprogram and Redistribute Grease, R & R IP and Two Front Servos/Modules, and R & R Rear Trim Panels and Two Rear Servos/Modules	6.0	87106-#####*	72	41
AC1980	Reprogram and Redistribute Grease, and R & R Front HVAC Box and One Front Servo/Module	6.4			
AC1981	Reprogram and Redistribute Grease, and R & R Front HVAC Box and Two Front Servos/Modules	6.5			
AC1982	Reprogram and Redistribute Grease, and R & R Front HVAC Box and Three Front Servos/Modules	6.6			
AC1983	Reprogram and Redistribute Grease, and R & R Front HVAC Box and Four Front Servos/Modules	6.7			
AC1984	Reprogram and Redistribute Grease, and R & R Front HVAC Box and Five Front Servos/Modules	6.8			
AC1985	Reprogram and Redistribute Grease, and R & R Rear HVAC Box and One Rear Servo/Module	3.1			
AC1986	Reprogram and Redistribute Grease, and R & R Rear HVAC Box and Two Rear Servos/Modules	3.2			
AC1987	Reprogram and Redistribute Grease, and R & R Rear HVAC Box and Three Rear Servos/Modules	3.3			
AC1988	Reprogram and Redistribute Grease, R & R IP and One Front Servo/Module, and R & R Rear HVAC Box and One Rear Servo/Module	7.6			
AC1989	Reprogram and Redistribute Grease, R & R IP and One Front Servo/Module, and R & R Rear HVAC Box and Two Rear Servos/Modules	7.7			

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Warranty Information (continued)

Table 2. Servo Replacement on Vehicle (continued)

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC1990	Reprogram and Redistribute Grease, R & R IP and One Front Servo/Module, and R & R Rear HVAC Box and Three Rear Servos/Modules	7.8	87106-#####*	72	41
AC1991	Reprogram and Redistribute Grease, R & R IP and Two Front Servos/Modules, and R & R Rear HVAC Box and One Rear Servo/Module	7.7			
AC1992	Reprogram and Redistribute Grease, R & R IP and Two Front Servos/Modules, and R & R Rear HVAC Box and Two Rear Servos/Modules	7.8			
AC1993	Reprogram and Redistribute Grease, R & R IP and Two Front Servos/Modules, and R & R Rear HVAC Box and Three Rear Servos/Modules	7.9			
AC1994	Reprogram and Redistribute Grease, R & R Front HVAC Box and One Front Servo/Module, and R & R Rear Trim Panels and One Rear Servo/Module	7.1			
AC1995	Reprogram and Redistribute Grease, R & R Front HVAC Box and One Front Servo/Module, and R & R Rear Trim Panels and Two Rear Servos/Modules	7.2			
AC1996	Reprogram and Redistribute Grease, R & R Front HVAC Box and One Front Servo/Module, and R & R Rear HVAC Box and One Rear Servo/Module	8.9			
AC1997	Reprogram and Redistribute Grease, R & R Front HVAC Box and One Front Servo/Module, and R & R Rear HVAC Box and Two Rear Servos/Modules	9.0			
AC1998	Reprogram and Redistribute Grease, R & R Front HVAC Box and One Front Servo/Module and R & R Rear HVAC Box and Three Rear Servos/Modules	9.1			

*Warranty claim MUST be submitted with the correct ten-digit OFF for the vehicle being repaired by searching Air Conditioning, Amplifier (88650) and Servo Sub-assy, Damper (87106) in the Electronic Parts Catalog using the VIN filter.

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Warranty Information (continued)

Table 2. Servo Replacement on Vehicle (continued)

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC1999	Reprogram and Redistribute Grease, R & R Front HVAC Box and Two Front Servos/Modules, and R & R Rear Trim Panels and One Rear Servo/Module	7.2	87106-#####*	72	41
AC2000	Reprogram and Redistribute Grease, R & R Front HVAC Box and Two Front Servos/Modules, and R & R Rear Trim Panels and Two Rear Servos/Modules	7.3			
AC2001	Reprogram and Redistribute Grease, R & R Front HVAC Box and Two Front Servos/Modules, and R & R Rear HVAC Box and One Rear Servo/Module	9.0			
AC2002	Reprogram and Redistribute Grease, R & R Front HVAC Box and Two Front Servos/Modules and R & R Rear HVAC Box and Two Rear Servos/Modules	9.1			
AC2003	Reprogram and Redistribute Grease, R & R Front HVAC Box and Two Front Servos/Modules, and R & R Rear HVAC Box and Three Rear Servos/Modules	9.2			
AC2004	Reprogram and Redistribute Grease, R & R Front HVAC Box and Three Front Servos/Modules, and R & R Rear Trim Panels and One Rear Servo/Module	7.3			
AC2005	Reprogram and Redistribute Grease, R & R Front HVAC Box and Three Front Servos/Modules and R & R Rear Trim Panels and Two Rear Servos/Modules	7.4			
AC2006	Reprogram and Redistribute Grease, R & R Front HVAC Box and Three Front Servos/Modules, and R & R Rear HVAC Box and One Rear Servo/Module	9.1			
AC2007	Reprogram and Redistribute Grease, R & R Front HVAC Box and Three Front Servos/Modules, and R & R Rear HVAC Box and Two Rear Servos/Modules	9.2			

*Warranty claim MUST be submitted with the correct ten-digit OFF for the vehicle being repaired by searching Air Conditioning, Amplifier (88650) and Servo Sub-assy, Damper (87106) in the Electronic Parts Catalog using the VIN filter.

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Warranty Information (continued)

Table 2. Servo Replacement on Vehicle (continued)

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC2008	Reprogram and Redistribute Grease, R & R Front HVAC Box and Three Front Servos/Modules, and R & R Rear HVAC Box and Three Rear Servos/Modules	9.3	87106-#####*	72	41
AC2009	Reprogram and Redistribute Grease, R & R Front HVAC Box and Four Front Servos/Modules, and R & R Rear Trim Panels and One Rear Servo/Module	7.4			
AC2010	Reprogram and Redistribute Grease, R & R Front HVAC Box and Four Front Servos/Modules, and R & R Rear HVAC Box and Two Rear Servos/Modules	7.5			
AC2011	Reprogram and Redistribute Grease, R & R Front HVAC Box and Four Front Servos/Modules, and R & R Rear HVAC Box and One Rear Servo/Module	9.2			
AC2012	Reprogram and Redistribute Grease, R & R Front HVAC Box and Four Front Servos/Modules, and R & R Rear HVAC Box and Two Rear Servos/Modules	9.3			
AC2013	Reprogram and Redistribute Grease, R & R Front HVAC Box and Four Front Servos/Modules, and R & R Rear HVAC Box and Three Rear Servos/Modules	9.4			
AC2014	Reprogram and Redistribute Grease, R & R Front HVAC Box and Five Front Servos/Modules, and R & R Rear Trim Panels and One Rear Servo/Module	7.5			
AC2015	Reprogram and Redistribute Grease, R & R Front HVAC Box and Five Front Servos/Modules, and R & R Rear Trim Panels and Two Rear Servos/Modules	7.6			

*Warranty claim MUST be submitted with the correct ten-digit OFF for the vehicle being repaired by searching Air Conditioning, Amplifier (88650) and Servo Sub-assy, Damper (87106) in the Electronic Parts Catalog using the VIN filter.

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Warranty Information (continued)

Table 2. Servo Replacement on Vehicle (continued)

OP CODE	DESCRIPTION	TIME	OFF	T1	T2
AC2016	Reprogram and Redistribute Grease, R & R Front HVAC Box and Five Front Servos/Modules, and R & R Rear HVAC Box and One Rear Servo/Module	9.3	87106-#####*	72	41
AC2017	Reprogram and Redistribute Grease, R & R Front HVAC Box and Five Front Servos/Modules, and R & R Rear HVAC Box and Two Rear Servos/Modules	9.4			
AC2018	Reprogram and Redistribute Grease, R & R Front HVAC Box and Five Front Servos/Modules and, R & R Rear HVAC Box and Three Rear Servos/Modules	9.5			

*Warranty claim MUST be submitted with the correct ten-digit OFF for the vehicle being repaired by searching Air Conditioning, Amplifier (88650) and Servo Sub-assy, Damper (87106) in the Electronic Parts Catalog using the VIN filter.

APPLICABLE WARRANTY

- **This repair is covered under the Toyota Basic Warranty. This warranty is in effect for 36 months or 36,000 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.**

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Parts Information

SERVO NAME / DTC	PART NUMBER	PART DESCRIPTION	QTY	NOTES
[1] Air Mix Servo (D) / B1446 [3] Air Outlet Servo (D) / B1443	87106-60290	Damper Servo Sub-assembly (Driver Side Upper Damper Servo Sub-assembly Includes: [1] Air Mix Servo and [3] Air Outlet Servo)	1	W/Cool Box
	16418-15520	Packing (for Radiator Drain Cock)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	1	
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
	88840-60180	Air Conditioner Accessory Assembly*	1	
	-	Packing (for EVA Joint)	1	*The Air Conditioner Accessory Assembly Kit Includes These Parts
	-	Packing (for Ejector)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	3	
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
	90099-14121	O-ring (External Dimension: ~18.2 mm (0.717 in.))	2	
	-	Plug (for Quick Joint)	1	
	-	Plug (for Connector, Dia. 0.5 in.)	1	
	-	Plug (for Connector, Dia. 0.625 in.)	1	
-	Plug (for Ejector Connector)	1		
-	Plug (for EVA)	1		

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Parts Information (continued)

SERVO NAME / DTC	PART NUMBER	PART DESCRIPTION	QTY	NOTES
[2] Air Mix Servo (P) / B1441 [5] Cool Air Bypass Servo / B1445 [7] Air Outlet Servo (P) / B1448	87106-60310	Damper Servo Sub-assembly (P) Includes: [2] Air Mix Servo (P), [5] Cool Air Bypass Servo, and [7] Air Outlet Servo (P)	1	-
	16418-15520	Packing (for Radiator Drain Cock)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	1	W/O Cool Box
		O-ring (External Dimension: ~10.3 mm (0.406 in.))	4	W/Cool Box
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
	90099-14121	O-ring (External Dimension: ~18.2 mm (0.717 in.))	1	
[8] Air Mix Servo (F & R D) / B1457 [10] Air Outlet Servo (F & R D) / B1486	87106-60330	Damper Servo Sub-assembly (D) Includes: [8] Air Mix Servo (F & R D) and [10] Air Outlet Servo (F & R D)	1	-
	16418-15520	Packing (for Radiator Drain Cock)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	1	W/O Cooler Box
		O-ring (External Dimension: ~10.3 mm (0.406 in.))	4	W/Cooler Box
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
	90099-14121	O-ring (External Dimension: ~18.2 mm (0.717 in.))	1	-

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Parts Information (continued)

SERVO NAME / DTC	PART NUMBER	PART DESCRIPTION	QTY	NOTES
[4] Air Inlet Damper Servo	87106-60350	Damper Servo Sub-assembly (Blower Damper Servo Sub-assembly)	1	-
	16418-15520	Packing (for Radiator Drain Cock)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	1	W/O Cooler Box
		O-ring (External Dimension: ~10.3 mm (0.406 in.))	4	W/Cooler Box
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
	90099-14121	O-ring (External Dimension: ~18.2 mm (0.717 in.))	1	
[6] Rear Air Mix Servo	87106-28170	Damper Servo Sub-assembly (For Rear Air Mix)	1	
	16418-15520	Packing (for Radiator Drain Cock)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	1	-
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
	90189-06065	Grommet	2	
[9] Air Mix Servo (F & R P)	87106-60340	Damper Servo Sub-assembly (P)	1	
	90068-14011	O-ring (External Dimension: ~10.3 mm (0.406 in.))	1	W/Cooler Box
	90069-08007	O-ring (External Dimension: ~15.6 mm (0.614 in.))	1	
[11] Air Outlet Servo (Rr D)	87106-58030	Damper Servo Sub-assembly (for Rear Mode)	1	
[12] Rear Air Mix Servo (P)	87106-60280	Damper Servo Sub-assembly (for Rear Air Mix No. 2)	1	-

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Required Tools & Equipment

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
Plastic Pry Tool Kit*	00002-06020-01	1
DCA-8000 Battery Diagnostic Tool*	DCA-8000P T	1

*Essential SST.

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

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 15.30.027 or later is required.
- Additional Techstream units may be ordered by calling Approved Dealer Equipment (ADE) at 1-800-368-6787.

Calibration Information

MODEL	MODEL YEAR	CALIBRATION ID	
		PREVIOUS	NEW
Land Cruiser	2016 – 2017	8865060Q2201	8865060W0001
		8865060Q1001	
		8865060Q2101	

HVAC Servo Motor Malfunction

Confirmation Procedure

1. Confirm one or more of the following conditions are present:

- Uneven temperature or air flow between the vents.
- Little or no air flow from the vent(s).
- Improper MODE control function.

Does the vehicle exhibit ANY of the conditions listed above?

- **YES** — [Continue to the Flash Reprogramming Procedure.](#)
- **NO** — Continue to step 2.

2. Using Techstream, check for the following stored DTCs:

- B1441 – Air Mix Damper Control Servo Motor Circuit (Passenger Side).
- B1442 – Air Inlet Damper Control Servo Motor Circuit.
- B1443 – Air Outlet Damper Control Servo Motor Circuit.
- B1445 – Passenger Side Cool Air Bypass Damper Control.
- B1446 – Air Mix Damper Control Servo Motor Circuit (Driver Side).
- B1447 – Rear Air Mix Damper Control Servo Motor Circuit (Driver Side).
- B1448 – Passenger Side Face Servo Motor Circuit.
- B1449 – Rear Air Outlet Damper Control Servo Motor Circuit.
- B1457 – Driver Side Air Outlet Damper Control Servo Motor Circuit.
- B1458 – Passenger Side Air Outlet Damper Control Servo Motor Circuit.
- B1486 – Driver Side Air Outlet Damper Control Servo Motor Circuit.
- B1488 – Rear Air Mix Damper Control Servo Motor Circuit (Front Passenger).

3. Are ANY of the DTCs listed above present?

- **YES** — [Continue to the Flash Reprogramming Procedure.](#)
- **NO** — This bulletin does NOT apply. Continue diagnosis using the Repair Manual.

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Flash Reprogramming Procedure

1. Flash Reprogram the air conditioning amplifier assembly.

NOTE

The air conditioning amplifier flash reprogram is only performed one time if the air conditioning amplifier has NOT been flash reprogrammed previously.

Follow the procedure outlined in Service Bulletin [T-SB-0134-16](#), *Techstream ECU Flash Reprogramming Procedure*, and flash the air conditioning amplifier with the NEW calibration file update.

NOTE

The battery diagnostic tool MUST be used in Power Supply Mode to maintain battery voltage above 11.4V while flash reprogramming the air conditioning amplifier.

NOTICE

- Damage to the air conditioning amplifier may occur if the correct battery charge mode setting is NOT used.
- Power Supply Mode is used to maintain battery voltage at 13.5V while flash reprogramming.
- For details on how to use the battery diagnostic tool, refer to the [DCA-8000 Battery Diagnostic Tool Instruction Manual](#) located in *TIS – Diagnostics – Tools & Equipment – Battery Diagnostics*.

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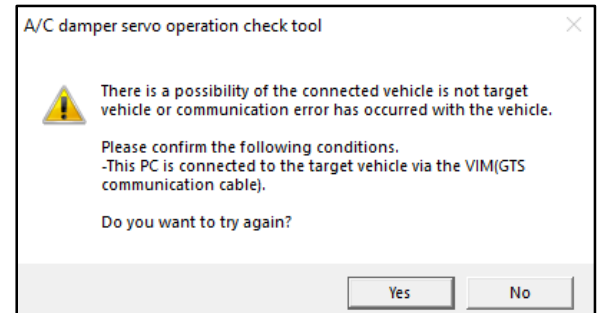
Servo Cleaning Operation Procedure

1. Clean the servos using the AC damper servo operation check tool.
 - A. Continue with the battery diagnostic tool connected using the “Power Supply Mode” ONLY.
 - B. Confirm flash reprogramming of the air conditioning amplifier is complete, otherwise the AC damper servo operation check tool will show the corresponding error message.

NOTE

The AC damper servo operation check tool will ONLY function correctly with the NEW calibration file update.

Figure 1.



- C. BEFORE using the AC damper servo operation check tool, manually set the front and rear air conditioning to the following settings:
 - MODE – Face
 - Temperature – Max Cold
 - Air Inlet – Fresh
- D. Download the AC damper servo operation check tool onto the Techstream desktop.
 - (1) Select the following link to download the AC damper servo operation check tool to Techstream:
[AC damper servo operation check tool download.](#)

NOTE

Depending on browser and settings used, the file may not automatically save to the Techstream desktop. If this is the case, locate the downloaded file and save it to the Techstream desktop.

- E. Confirm the ignition is in the IG-ON position and the Techstream unit is connected to the DLC3 connector.
- F. Confirm NO other programs on the Techstream unit are currently communicating with the vehicle.
- G. Double-click on the AC damper servo operation check tool from the Techstream desktop.

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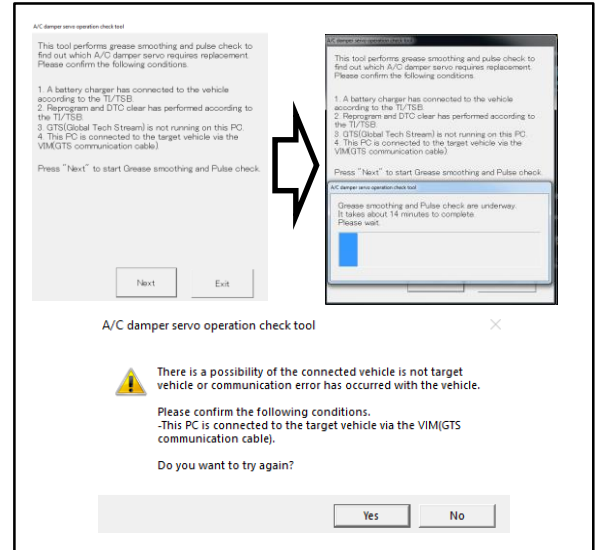
Servo Cleaning Operation Procedure (continued)

- H. Click on NEXT to start the AC damper servo operation check tool and the progress bar will show. It will take between 8 – 14 minutes to complete the cleaning process depending on the condition of the servos. The completion rate of the progress bar will show between 50% – 100%.

NOTE

If the connection between Techstream and the vehicle is interrupted during the cleaning process, the error message in Figure 2 will also display. To reconnect, turn OFF the Techstream unit and disconnect it from the DLC3 connector, reconnect Techstream and confirm connections, and turn ON the Techstream unit and restart the cleaning process.

Figure 2.



- I. When the cleaning process is completed, the DTC check result screen shown on the next page will be displayed. If ANY DTC is output, the servo related to it will require replacement. (Reference the [Servo Location Guide \(page 20\)](#) for the servo motor location.)

NOTE

If DTCs B1497 or B149A are output, this bulletin does NOT apply. The communication from the air conditioning amplifier to each servo has an error or a communication interruption. Complete sub steps I and J and continue diagnosis using the applicable Repair Manual.

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Servo Cleaning Operation Procedure (continued)

Are ANY DTCs output?

- **YES** — Check DTC and Servo Location Guide and replace the appropriate servo according to the displayed DTC (Figure 3).
- **NO** — Complete substeps J – K to complete the repair and return the vehicle to the customer (Figure 4).

Figure 3.

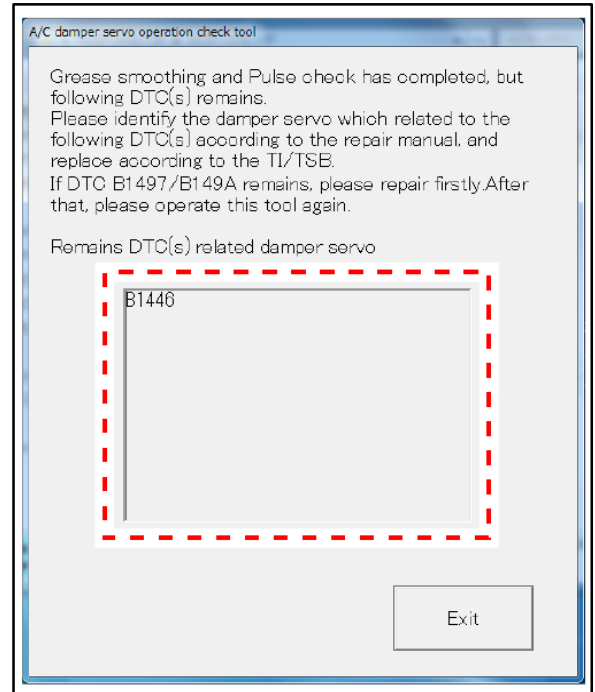
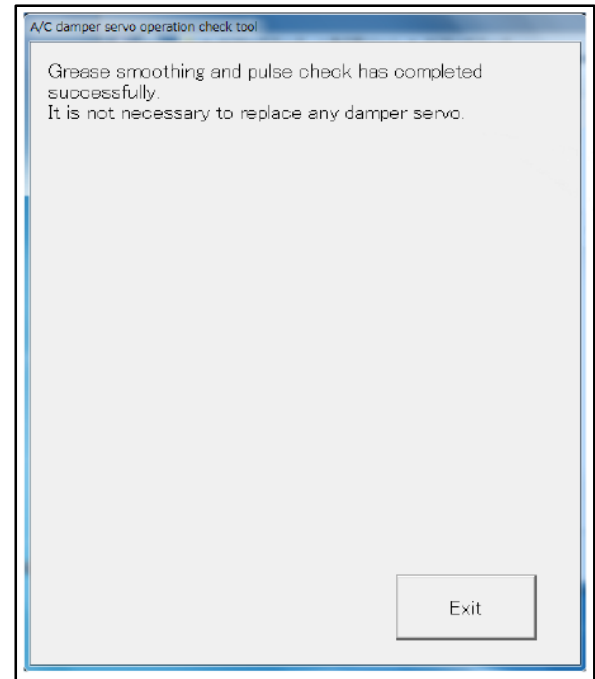


Figure 4.

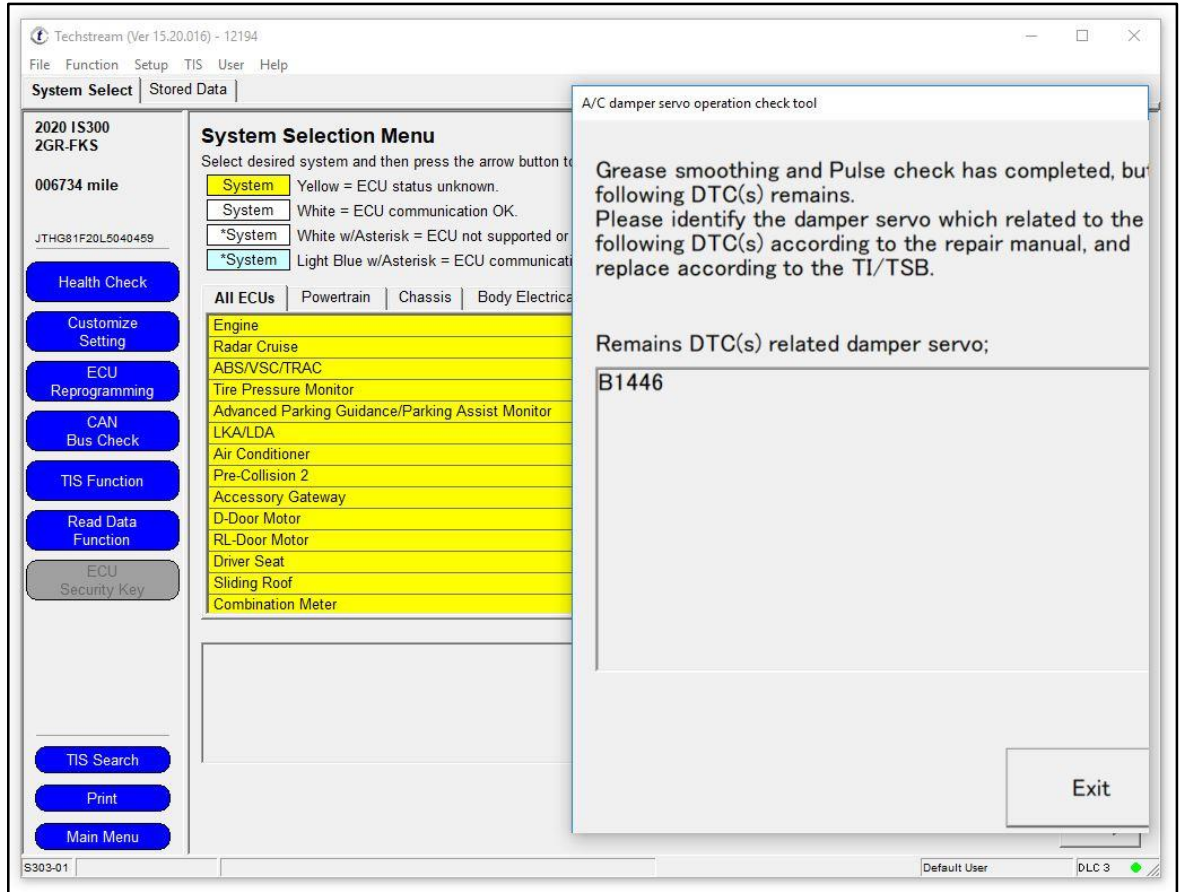


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Servo Cleaning Operation Procedure (continued)

- J. Take a screen shot of the VIN displayed on the Techstream System Selection Menu overlaid with the AC damper servo operation check tool results showing the DTCs. Retain the screen shot as per Toyota Warranty Policies and Procedures with the repair order.

Figure 5.



- K. The Servo Cleaning Operation is complete. Cycle the ignition to the IG-OFF position and select Exit.
- L. Turn OFF and disconnect the battery diagnostic tool.

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure

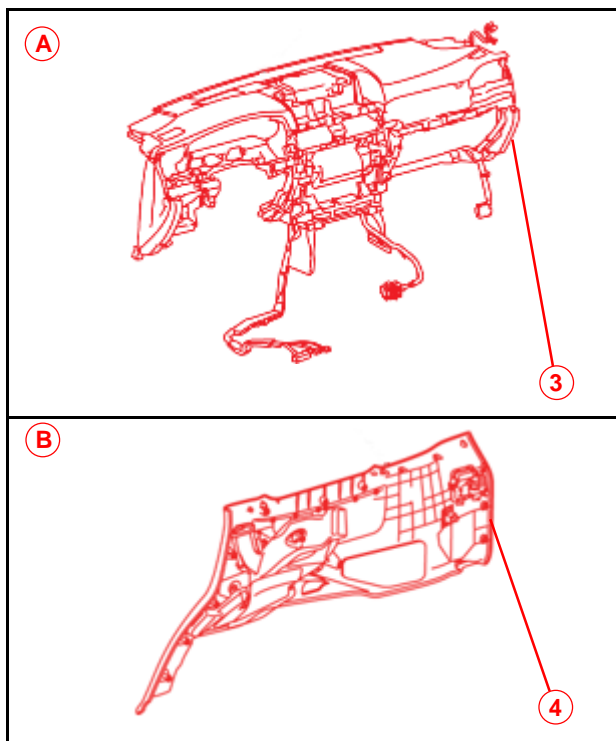
NOTE

The servo replacement procedure (and surrounding parts to remove) varies depending on the servo to be replaced. Perform the replacement work according to the Servo Location Guide.

Servo Location Guide

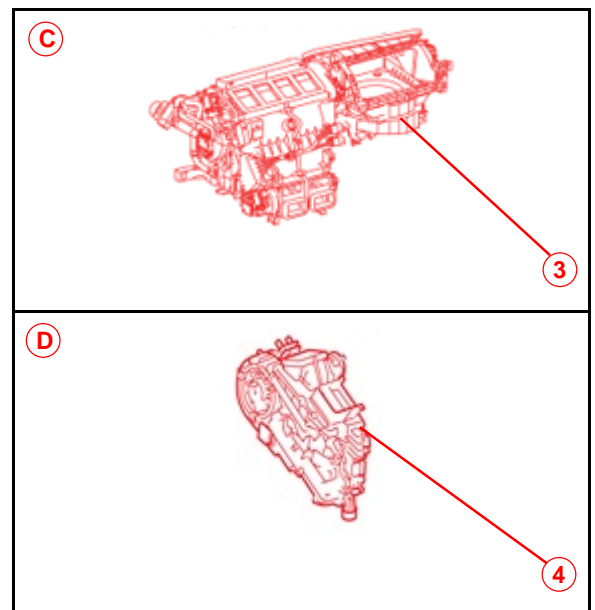
Required Removal Work for Replacement of Each Servo.

Figure 6. Servo Replacement on Vehicle



A	Group A
B	Group B
3	Instrument Panel Safety Pad Assembly
4	Front Quarter Trim Panel Assembly, LH

Figure 7. Servos Replaced From Air Conditioning Units Removed From Vehicle



C	Group C
D	Group D
3	Air Conditioning Unit
4	Rear Cooling Unit Assembly

- Groups A and B servo replacement:
Servo replacement takes place on the vehicle.
- Groups C and D servo replacement:
To access the servos, servo replacement requires removal of the air conditioning unit and the rear cooling unit assembly from the vehicle.
If multiple servos need to be replaced that require groups C or D procedures, performing procedures for groups A and B will NOT be necessary.

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Servo Location Guide (continued)

NO.	DTC	PART NO.	DESCRIPTION	A	B	C	D	PG.
[1]	B1446	87106-60290	Air Mix Servo (D)	● *1	–	● *2	–	23, 39
[3]	B1443		Air outlet Servo (D)	● *1	–	● *2	–	23, 39
[2]	B1441	87106-60310	Air Mix Servo (P)	–	–	●	–	48
[5]	B1445		Cool Air Bypass Servo	–	–	●	–	48
[7]	B1448		Air Outlet Servo (P)	–	–	●	–	48
[8]	B1457	87106-60330	Air mix Servo (F & R D)	–	–	●	–	56
[10]	B1486		Air Outlet Servo (F & R D)	–	–	●	–	56
[4]	B1442	87106-50550	Air Inlet Damper Servo	–	–	●	–	54
[6]	B1447	87106-28170	Rear Air Mix Servo	–	–	–	●	59
[9]	B1458	87106-50550	Air mix Servo (F & R P)	● *3	–	–	–	28
[11]	B1449	87106-58030	Air Outlet Servo (Rr D)	–	●	–	–	30
[12]	B1488	87106-60280	Rear Air mix Servo (P)	–	●	–	–	36

*1 W/O Cool Box.

*2 W/Cool Box.

*3 Cool Box equipped vehicles need to recover the refrigerant.

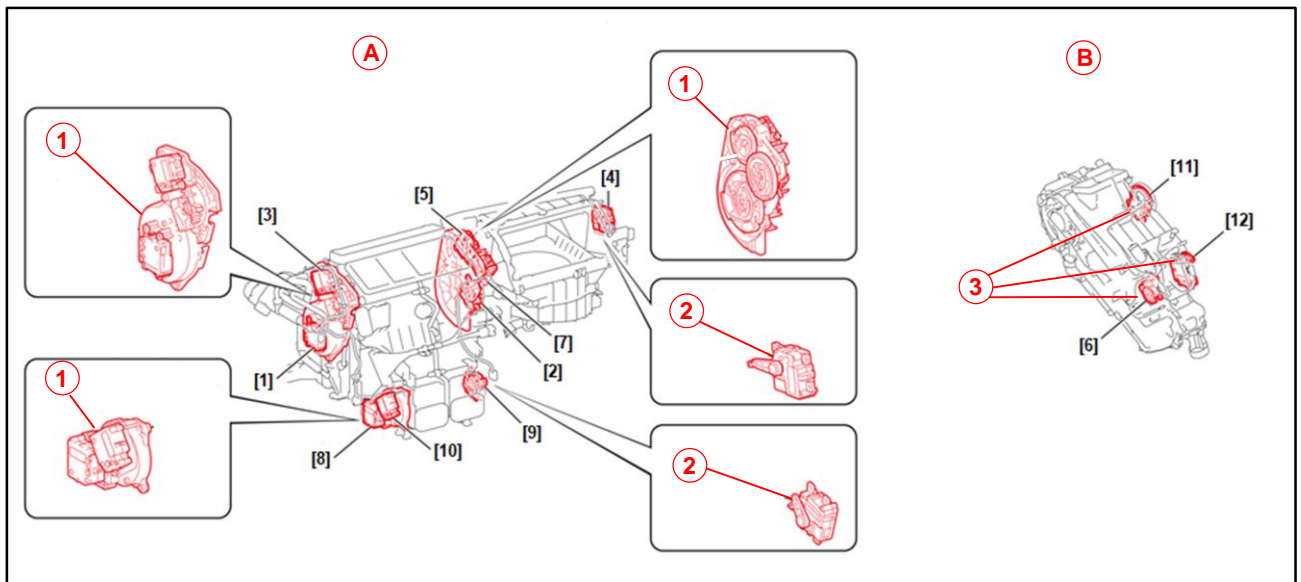
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Servo Location Guide (continued)

On the front air conditioning unit assembly, there are several damper servo sub-assemblies equipped with multiple servos. If a servo requiring replacement is on a damper servo sub-assembly, the entire damper servo sub-assembly **MUST** be replaced and **NOT** the servo itself. If the entire damper servo sub-assembly is **NOT** replaced, the servo **CANNOT** be reinstalled as there is **NO** ability to align the servo at the installation location. Stand-alone servos can be replaced individually.

Figure 8.



A	Front Air Conditioning Unit Assembly
1	Damper Servo Sub-assembly Replacement
2	Individual Servo Replacement

B	Rear Air Conditioning Unit Assembly
3	Individual Servo Replacement

NOTE
 ALL rear servos can be replaced individually. Replacement of servo [6] requires removal of the rear air conditioning unit assembly.

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group A (Servo Replacement on Vehicle)

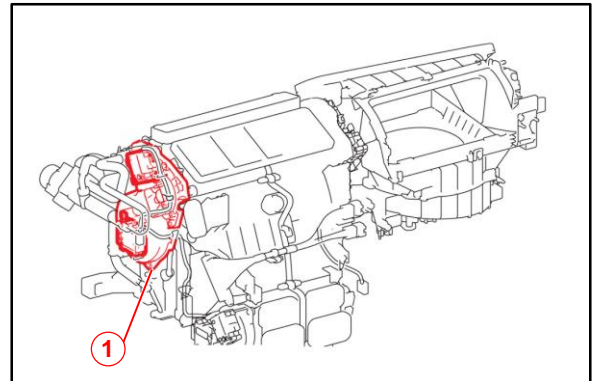
NOTE

If there are currently servos requiring replacement that are BOTH in group A and in group C, perform the air conditioning unit removal steps from [group C \(page 39\)](#) first, then follow the servo replacement steps from group A to replace the group A servo. Replace ALL group A servos BEFORE reinstalling the air conditioning unit.

- [1] Replace Air Mix Servo (D) (W/O Cool Box)**
- [3] Replace Air Outlet Servo (D) (W/O Cool Box)**
- [9] Replace Air Mix Servo (F & R P)**

1. Remove the driver side upper damper servo sub-assembly to replace both the [1] air mix servo (D) (w/o cool box) and the [3] air outlet servo (D) (w/o cool box) as they MUST be replaced together.

Figure 9.



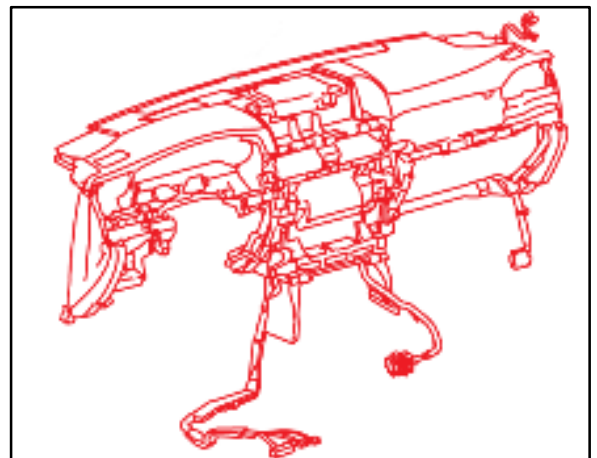
1	Replace Together
----------	-------------------------

- A. Remove the instrument panel safety pad assembly.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim – [“Interior Panels / Trim: Instrument Panel Safety Pad: Removal”](#)

Figure 10.



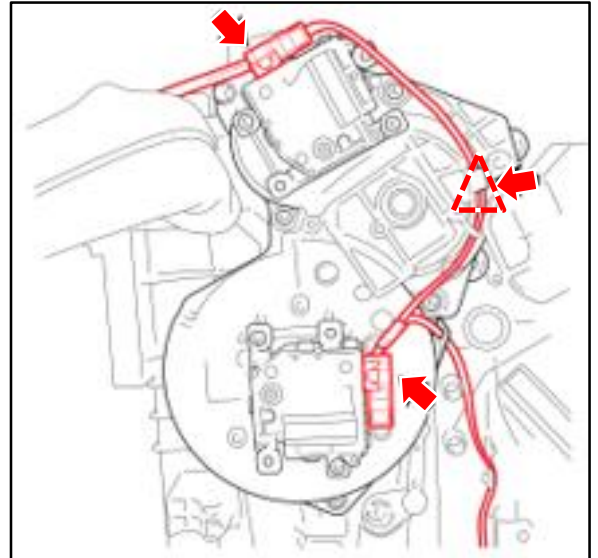
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group A (Servo Replacement on Vehicle) (continued)

- B. Disconnect the two connectors and clamp.

Figure 11.

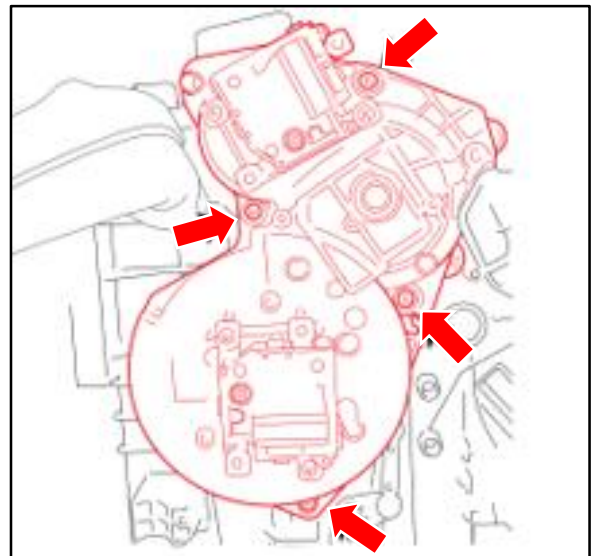


- C. Remove the four screws and the damper servo sub-assembly.

NOTE

Do NOT remove the screws installed on the servo body.

Figure 12.



- D. Mark and store the removed servo in a separate container to avoid reinstalling it in error.

NOTE

Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

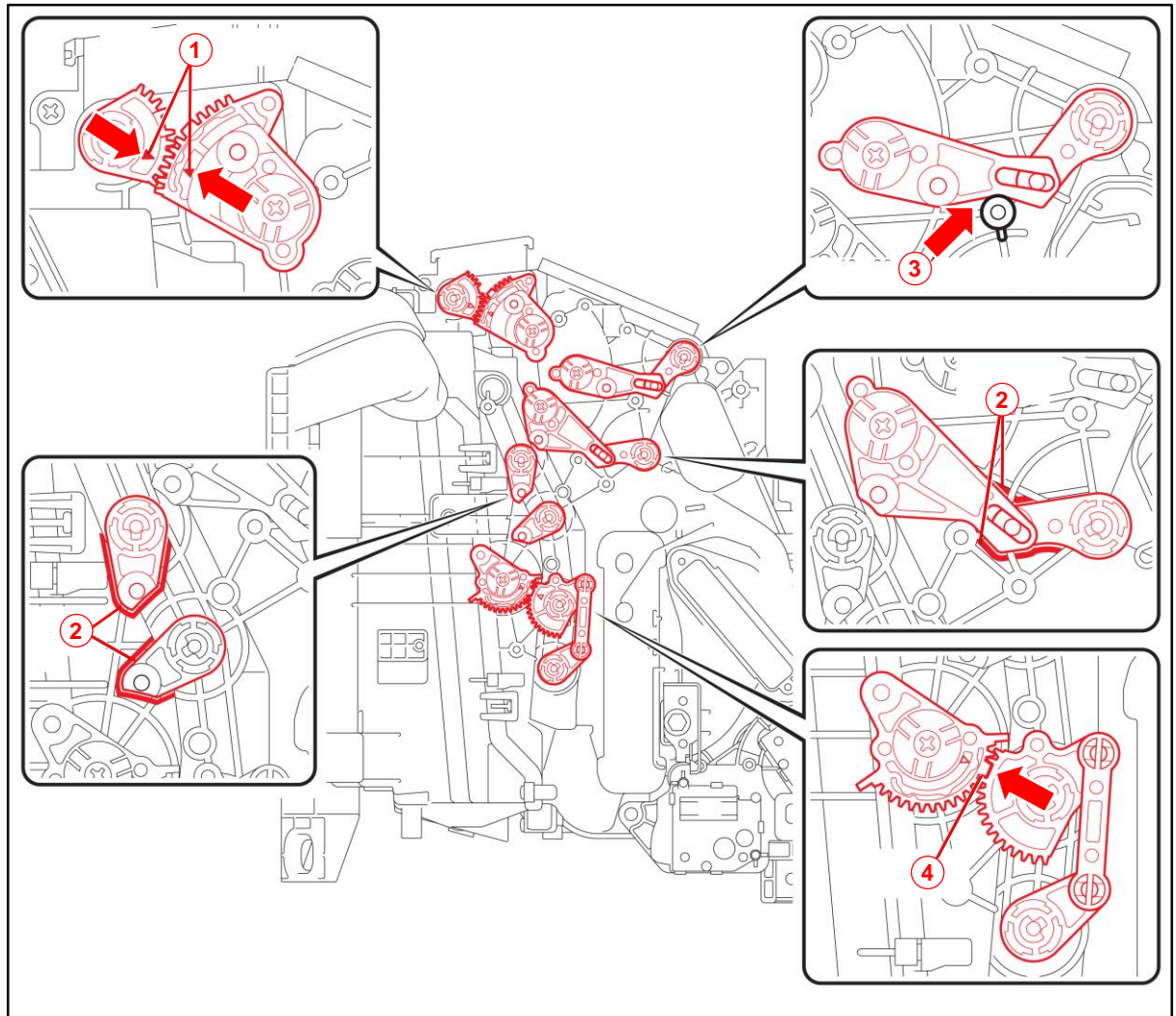
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group A (Servo Replacement on Vehicle) (continued)

- E. Install the NEW driver side upper damper servo sub-assembly for the air mix servo (D) and the air outlet servo (D) (w/o cool box) by aligning each lever with the corresponding alignment marks stamped on the air conditioning unit.

Figure 13.



1	Match Mark
2	Mark

3	Push the Link Downward
4	Big Tooth

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

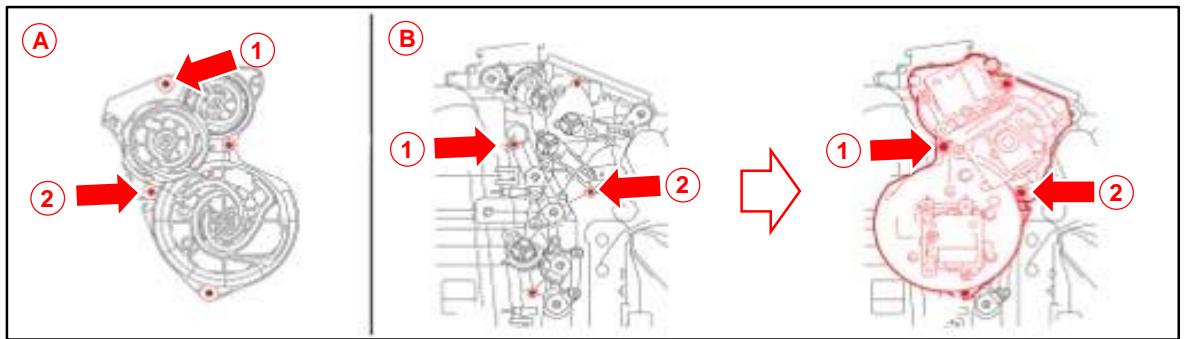
Replacement Procedure Group A (Servo Replacement on Vehicle) (continued)

- F. Temporarily install the NEW damper servo sub-assembly by engaging the screw installing holes of the damper servo sub-assembly side to the air conditioning radiator side in the order of point 1 then point 2.

NOTE

Be careful NOT to move the levers on the air conditioning radiator side. If a link was moved, reset the position of the link.

Figure 14.



A	Damper Servo Sub-assembly Side
1	Point 1
2	Point 2

B	Air Conditioning Radiator Side
----------	---------------------------------------

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

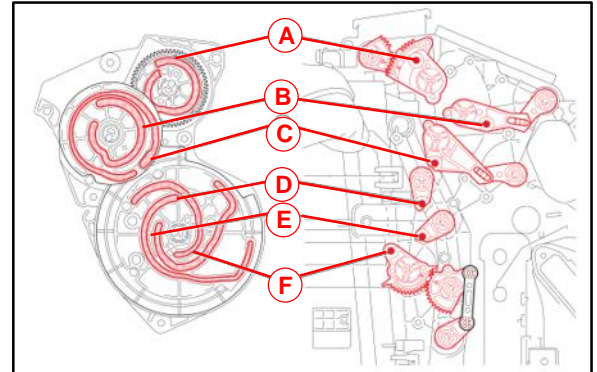
Replacement Procedure Group A (Servo Replacement on Vehicle) (continued)

- G. Confirm each link pin is inserted into each corresponding link groove.

CAUTION

The link pins will be misaligned if the damper servo sub-assembly is installed using force.

Figure 15.



- H. Install the damper servo sub-assembly with the four screws.

- I. Reconnect the clamp and the two connectors.

- J. Is this the last servo being replaced?
- **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

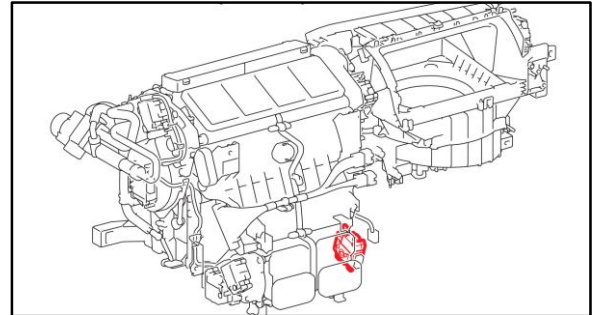
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group A (Servo Replacement on Vehicle) (continued)

2. Remove the passenger side lower [9] air mix servo (F & R P).

Figure 16.

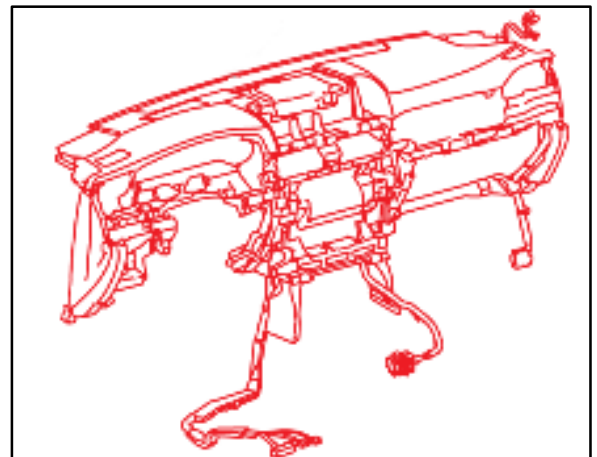


- A. Remove the instrument panel safety pad assembly.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim – [“Interior Panels / Trim: Instrument Panel Safety Pad: Removal”](#)

Figure 17.

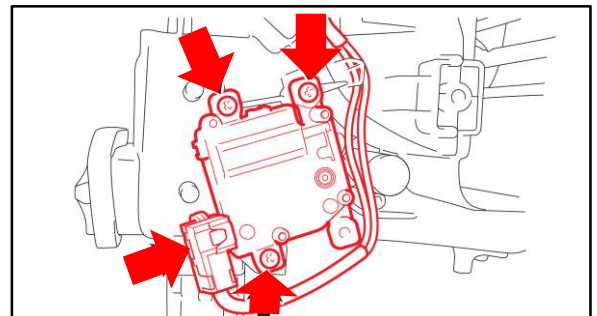


- B. Disconnect the connector, remove the three screws and the air mix servo.

NOTE

Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

Figure 18.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

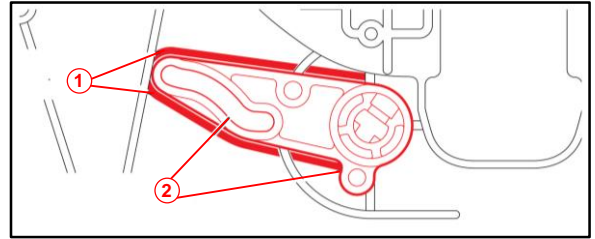
Replacement Procedure Group A (Servo Replacement on Vehicle) (continued)

- C. Mark and store the removed air mix servo in a separate container to avoid reinstalling it in error.
- D. Install the NEW passenger side lower air mix servo (F & R P) by aligning the lever with the mark on the air conditioning radiator side.

NOTE

Do NOT wipe off the grease in the groove.

Figure 19.



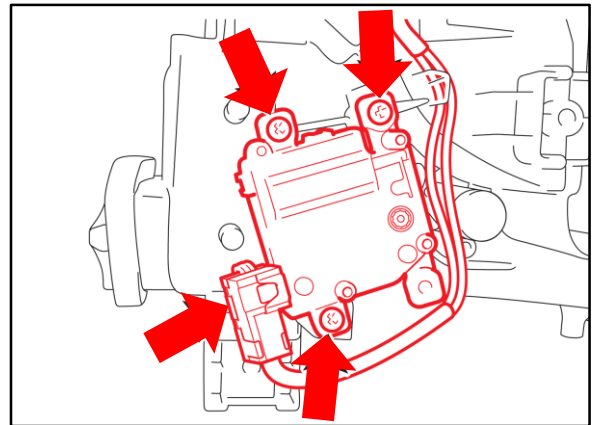
1	Mark
2	Do Not Wipe the Grease

- E. Install the NEW passenger side lower air mix servo (F & R P) three screws and reconnect the connector.

STOP

Confirm the link pin is inserted into the link groove.

Figure 20.



- F. Is this the last servo being replaced?
 - **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group B (Servo Replacement on Vehicle)

[11] Replace Air Outlet Servo (Rr D)

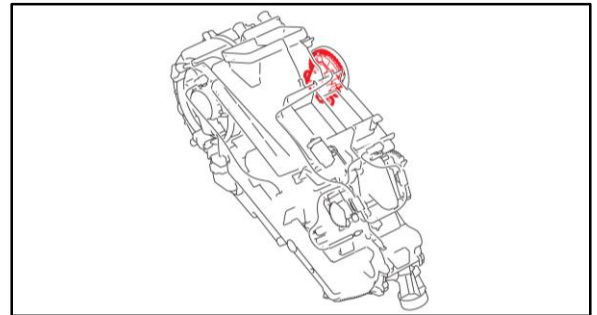
[12] Replace Rear Air Mix Servo (P)

NOTE

If there are currently servos requiring replacement that are BOTH in group B AND in group D, perform the rear cooling unit removal steps from [group D \(page 59\)](#) first, then follow the servo replacement steps from group B to replace the group B servo. Replace ALL group B servo(s) BEFORE reinstalling rear cooling unit.

1. Remove the [11] air outlet servo (Rr D).

Figure 21.

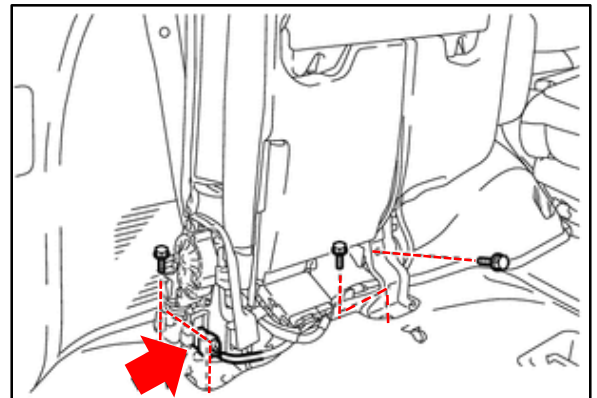


- A. Remove the rear No. 2 seat assembly LH.

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

- 2016 – 2017 Land Cruiser: *Vehicle Interior – Seat – “[Seat: Rear No. 2 Seat Assembly: Removal](#)”*

Figure 22.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

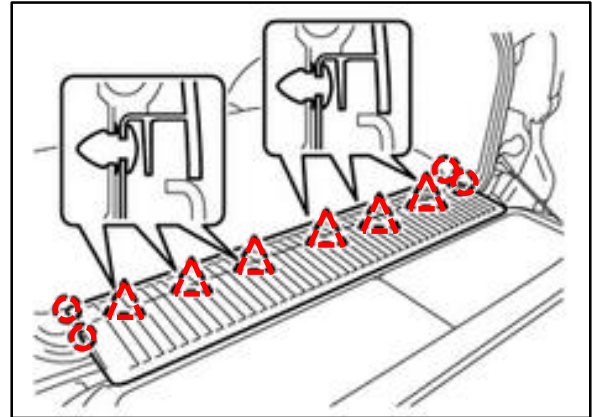
Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

- B. Remove the rear floor mat rear support plate.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim – [“Interior Panels / Trim: Roof Headlining: Removal”](#)

Figure 23.



- C. Remove the rear step cover.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim – [“Interior Panels / Trim: Roof Headlining: Removal”](#)

- D. Remove the rear door scuff plate LH.

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

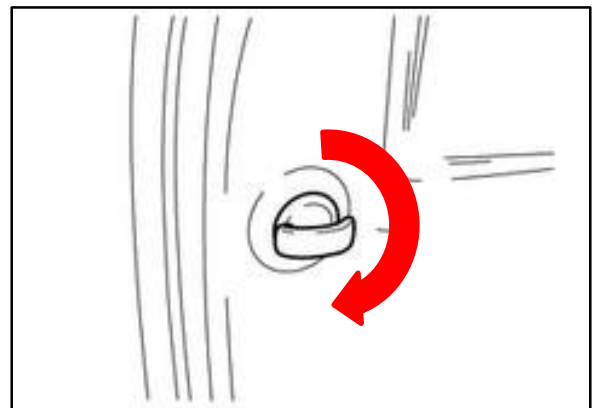
- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels / Trim – [“Interior Panels / Trim: Roof Headlining: Removal”](#)

- E. Remove the No. 1 luggage compartment trim hook.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim – [“Interior Panels / Trim: Roof Headlining: Removal”](#)

Figure 24.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

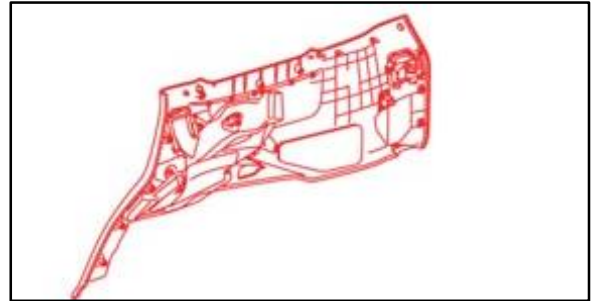
Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

- F. Remove the front quarter trim panel assembly LH.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim – “[Interior Panel / Trim: Roof Headlining: Removal](#)”

Figure 25.

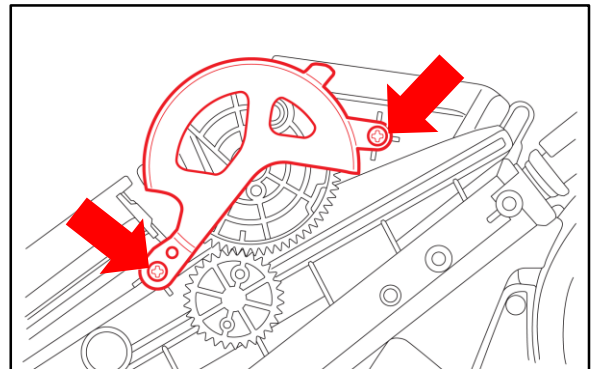


- G. Remove the two screws and plate cover from the air outlet servo (Rr D).

NOTE

Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

Figure 26.

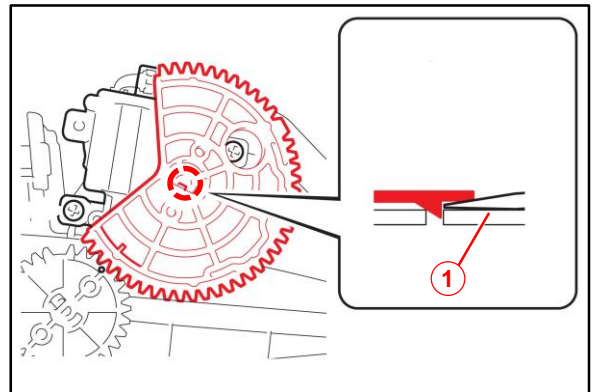



- H. Disengage the claw and remove the plate.

CAUTION

Do NOT raise the claws too much to avoid breaking them. ONLY raise them enough to disengage.

Figure 27.



	Claw
1	Screwdriver

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

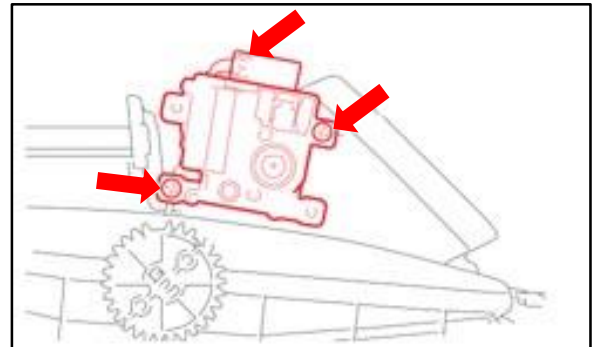
- I. Mark and store the removed plate in a separate container to avoid reinstalling it in error.

- J. Disconnect the connector and remove the two screws to remove the servo.

NOTE

Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

Figure 28.



- K. Mark and store the removed air mix servo in a separate container to avoid reinstalling it in error.

- L. Before you install the NEW air outlet servo (Rr D), turn the gear on the rear cooling unit side clockwise fully.

CAUTION

If the servo is installed with the gear turned counterclockwise fully, the servo malfunctions and it will be required to remove/install the servo again. Make sure to install the servo after turning the gear clockwise fully.

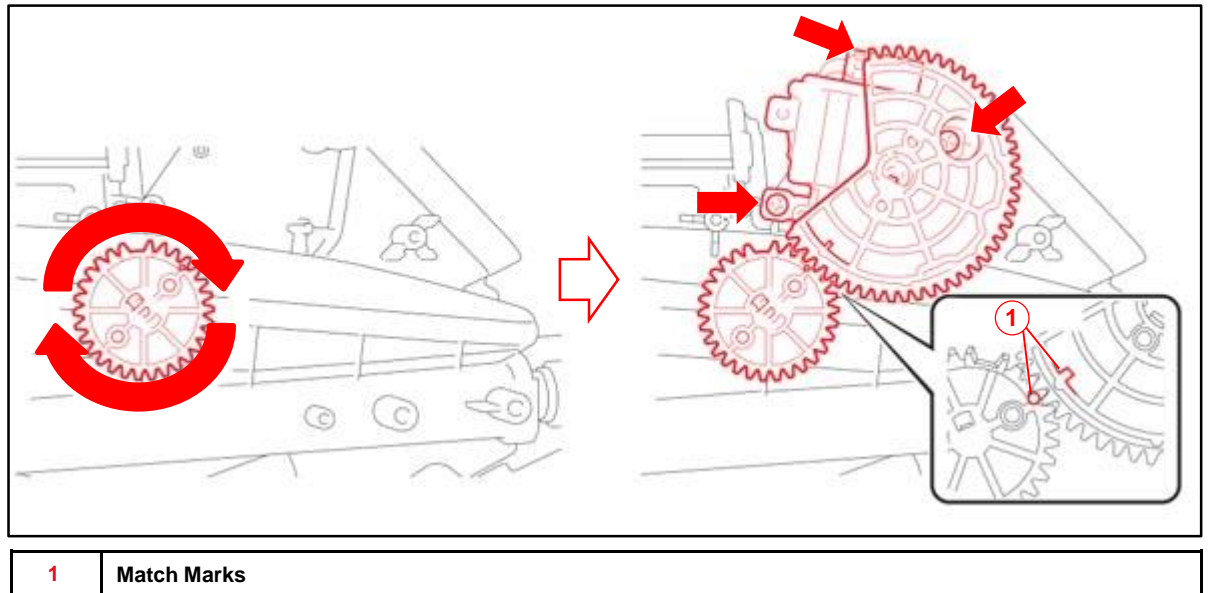
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

M. Align the NEW servo as shown in the illustration.

Figure 29.



N. Install the two screws and reconnect the connector.

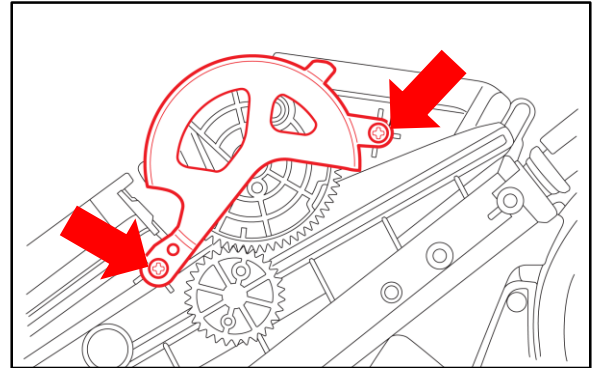
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

- O. Reinstall the plate cover with the two screws.

Figure 30.



- P. Is this the last servo being replaced?
- **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

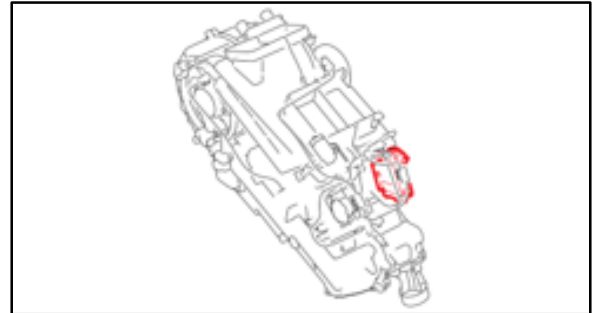
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

2. Remove the [12] rear air mix servo (P).

Figure 31.

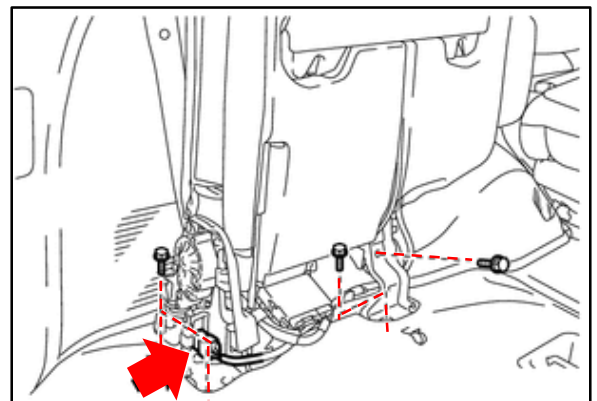


A. Remove the rear No. 2 seat assembly LH.

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

- 2016 – 2017 Land Cruiser: *Vehicle Interior – Seat – “[Seat: Rear No. 2 Seat Assembly: Removal](#)”*

Figure 32.

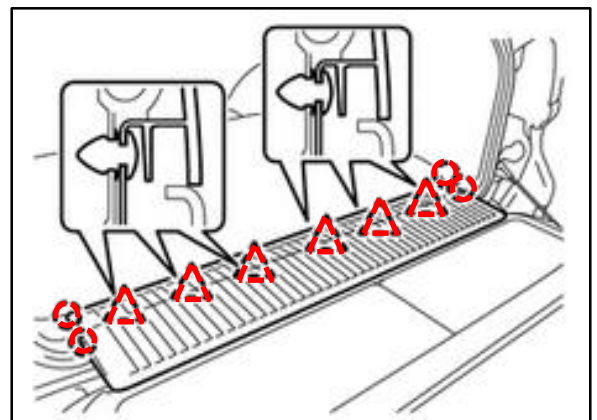


B. Remove the rear floor mat rear support plate.

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

- 2016 – 2017 Land Cruiser: *Vehicle Interior – Interior Panels/Trim – “[Interior Panels / Trim: Roof Headlining: Removal](#)”*

Figure 33.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

C. Remove the rear step cover.

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

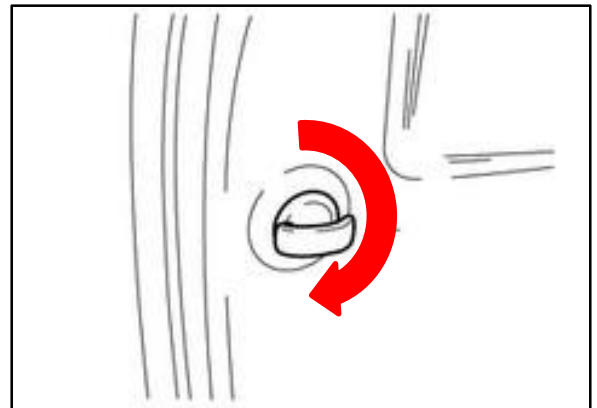
- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Removal”](#)

D. Remove the rear door scuff plate LH.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Removal”](#)

Figure 34.



E. Remove the front quarter trim panel assembly LH.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Removal”](#)

Figure 35.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

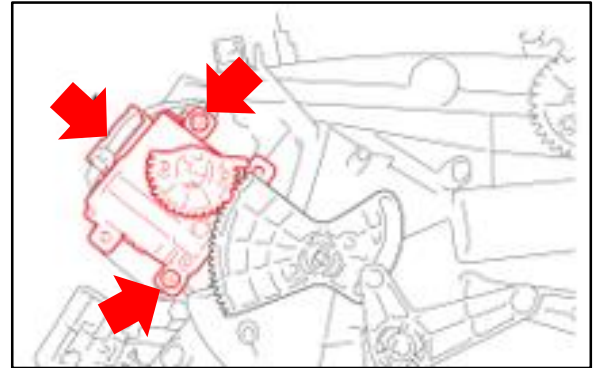
Replacement Procedure Group B (Servo Replacement on Vehicle) (continued)

- F. Disconnect the connector, remove the two screws, and the servo.

NOTE

- If it is difficult to remove the servo and gear together, remove the servo after disconnecting the gear.
- Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

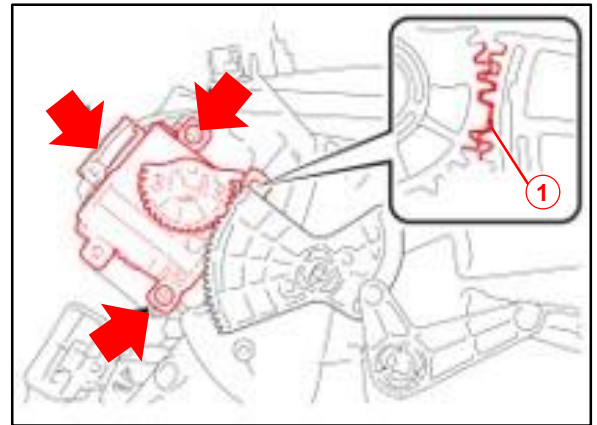
Figure 36.



- G. Mark and store the removed servo in a separate container to avoid reinstalling it in error.

- H. Install the NEW rear air mix servo (P) by aligning the servo as shown in the illustration, installing the two screws and reconnect the connector.

Figure 37.



1	Big Tooth
----------	------------------

- I. Is this the last servo being replaced?
- **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

HVAC Servo Motor Malfunction

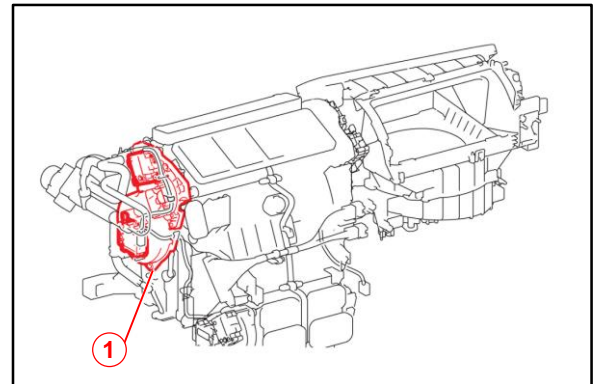
Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle)

- [1] Replace Air Mix Servo (D) (W/Cool Box)
- [2] Replace Air Mix Servo (P)
- [3] Replace Air Outlet Servo (D) (W/Cool Box)
- [4] Replace Air Inlet Damper Servo
- [5] Replace Cool Air Bypass Servo
- [7] Replace Air Outlet Servo (P)
- [8] Replace Air Mix Servo (F & R D)
- [10] Replace Air Outlet Servo (F & R D)

1. Remove the driver side upper damper servo sub-assembly for replacing both [1] Air Mix Servo (D) (w/Cool Box) and [3] Air Outlet Servo (D) (w/Cool Box) as they MUST be replaced together.

Figure 38.



1	Replace Together
---	------------------

- A. Remove the front air conditioning unit assembly.

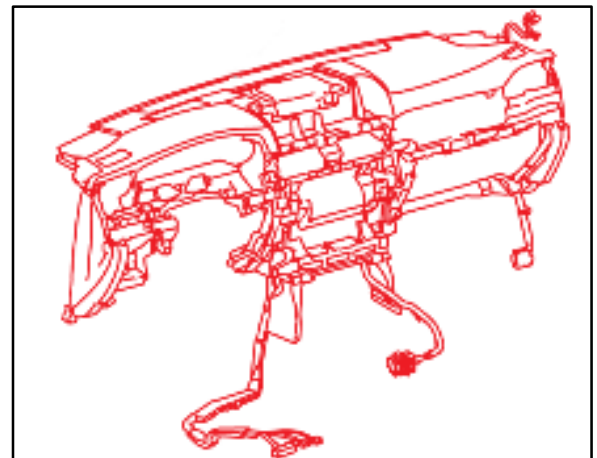
Refer to TIS, applicable model and model year Repair Manual:

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – “[Heating / Air Conditioning: Front Air Conditioning Unit: Removal](#)”

NOTE

Replace the packing for the radiator drain cock even though the repair manual states to reuse.

Figure 39.



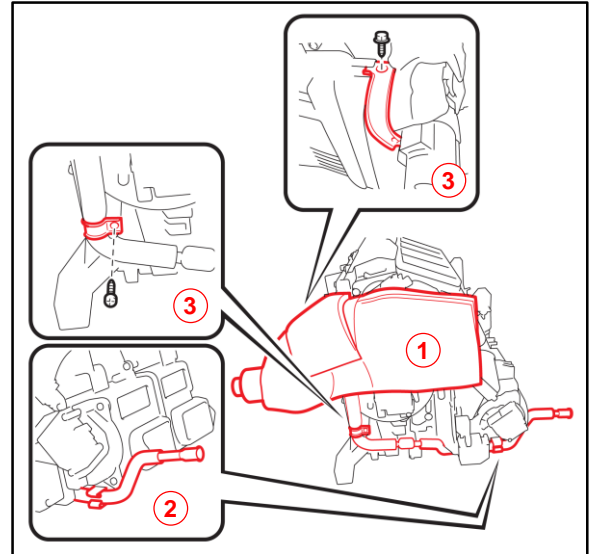
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- B. Remove the air conditioner tube and accessory assembly by removing the two screws and disconnecting the tube.

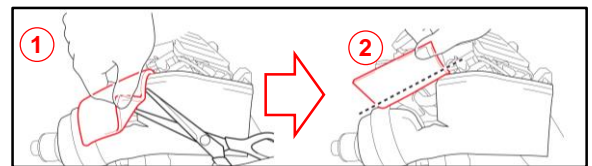
Figure 40.



1	Packing
2	Tube
3	Screw

- C. Using scissors, remove and cut off the packing (black) along with the adhesive surface.

Figure 41.



1	Cut off the Packing Along With the Adhesion Surface
2	Cut off the Packing

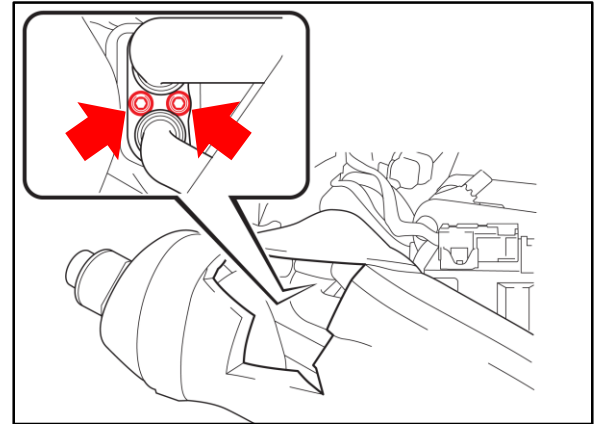
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

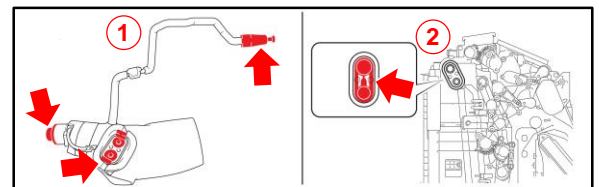
- D. Using a 4-mm hexagon wrench, remove the two hexagon bolts and air conditioner tube and accessory assembly.

Figure 42.



- E. Cover the open ends of the air conditioner tube and accessory assembly and the cool evaporator No. 1 with caps (kit parts) to prevent foreign debris and moisture from entering.

Figure 43.



1	Air Conditioner Tube and Accessory Assembly
2	Air Conditioning Radiator

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

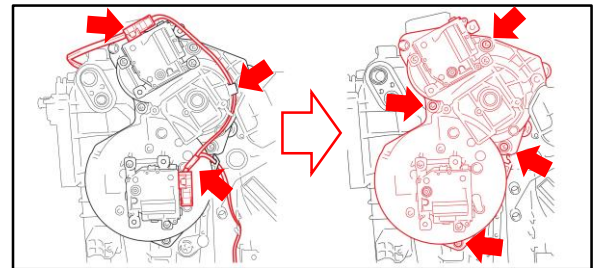
Replacement Procedure Group C (Servo Replaced From A/C the Unit Removed From the Vehicle) (continued)

- F. Disconnect the two connectors and the clamp and remove the four screws and damper servo sub-assembly.

NOTE

- Do NOT remove the screws installed on the servo body.
- Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

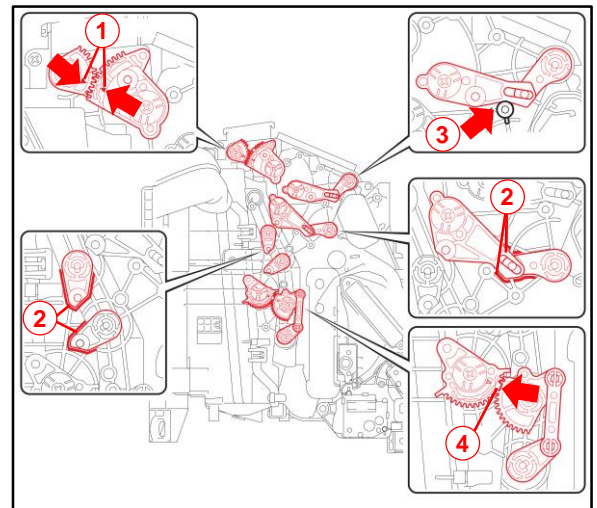
Figure 44.



- G. Mark and store the removed damper servo sub-assembly in a separate container to avoid reinstalling it in error.

- H. Install the NEW driver side upper damper servo sub-assembly for air mix servo (D) and air outlet servo (D) (w/cool box) by aligning each lever with the corresponding alignment marks stamped on the air conditioning unit.

Figure 45.



1	Match Mark
2	Mark
3	Push the Link Downward
4	Big Tooth

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

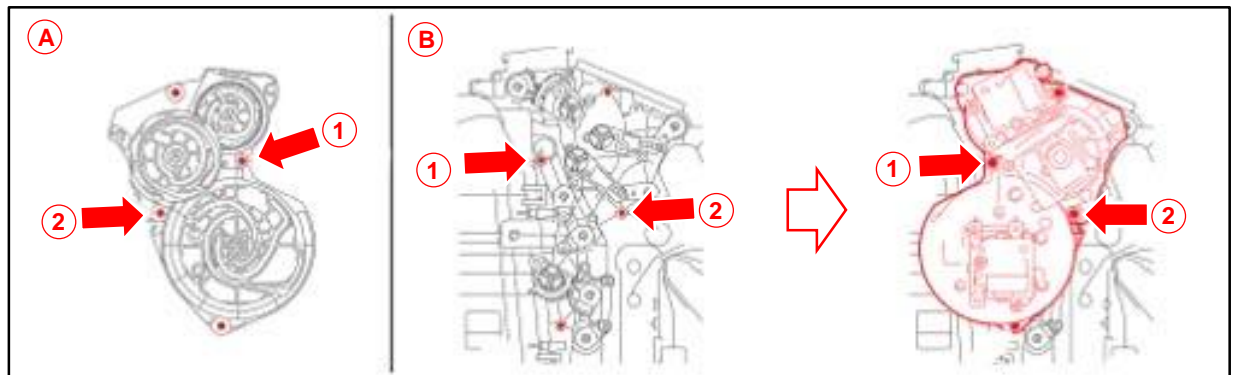
Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- I. Temporarily install the NEW damper servo sub-assembly by engaging the screw installing holes of the damper servo sub-assembly side to the air conditioning radiator side in the order of point 1 then point 2.

NOTE

Be careful NOT to move the levers on the air conditioning radiator side. If a link was moved, reset the position of the link again.

Figure 46.



A	Damper Servo Sub-assembly Side
1	Point 1
2	Point 2

B	Air Conditioning Radiator Side
----------	--------------------------------

- J. Confirm each link pin is inserted into each corresponding link groove.

CAUTION

The link pins will be misaligned if damper servo sub-assembly is installed using force.

- K. Install the damper servo sub-assembly with the four screws and reconnect the clamp and the two connectors.

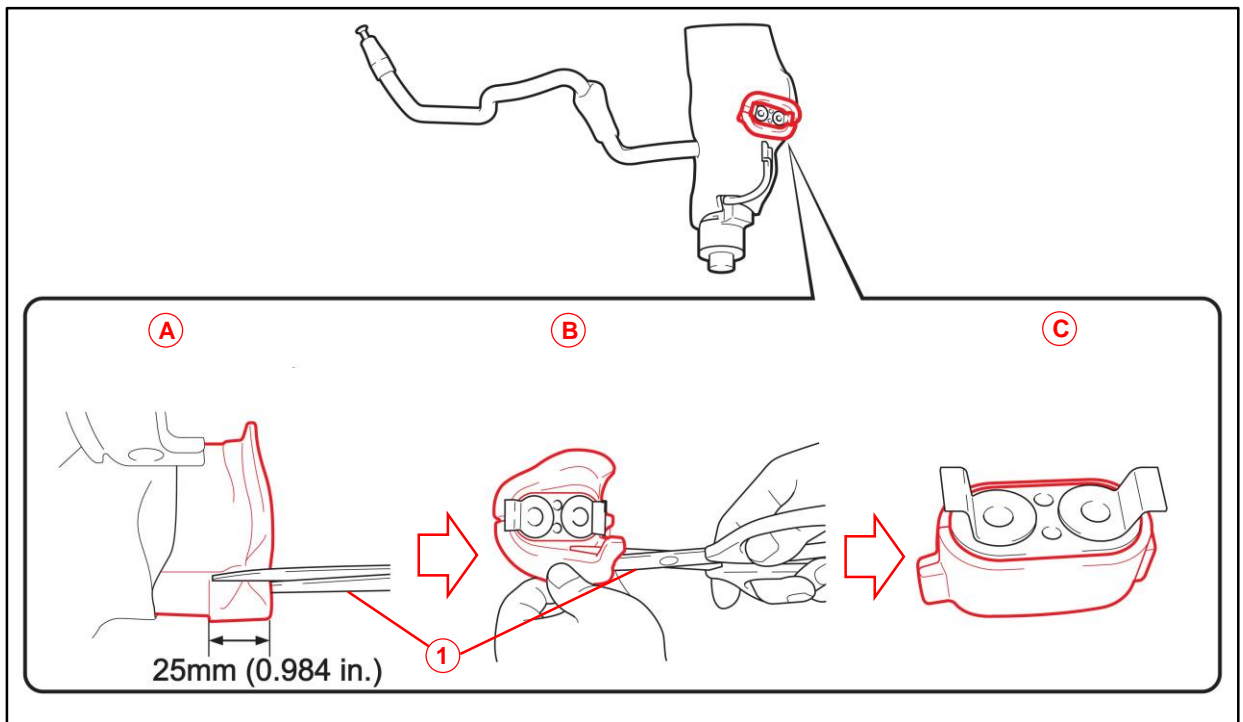
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- L. Reinstall the air conditioner tube and accessory assembly by cutting off the packing (gray) mating surface (ear portion) at 25 mm (0.984 in.) from the surface edge. Cut off the packing (gray) so that it is lower than the joint surface edge.

Figure 47.



A	Cut Off the Packing at 25 mm (0.984 in.) From the Surface Edge
B	Cut Off the Packing to Make it Lower Than the Surface Edge

C	After Cutting Off the Packing Surface Edge
1	Scissors

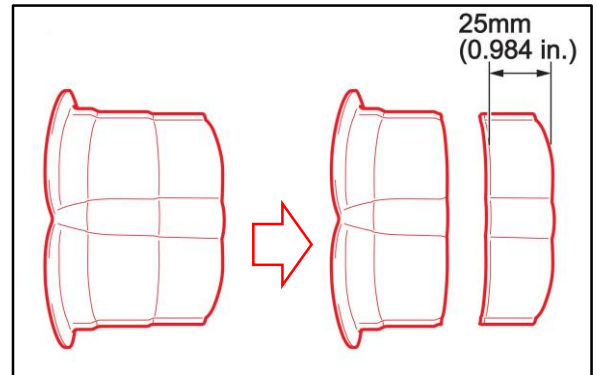
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- M. Cut off the NEW packing (gray) at 25 mm (0.984 in.) from the bottom edge.

Figure 48.

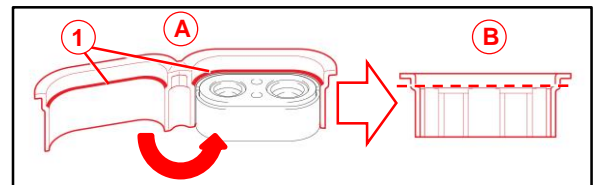


- N. Attach the NEW packing (gray) by matching the step to the joint surface edge.

NOTE

Make sure to thoroughly remove any packing (gray) adhesive, dust, sand, or dirt from the joint portion of the case.

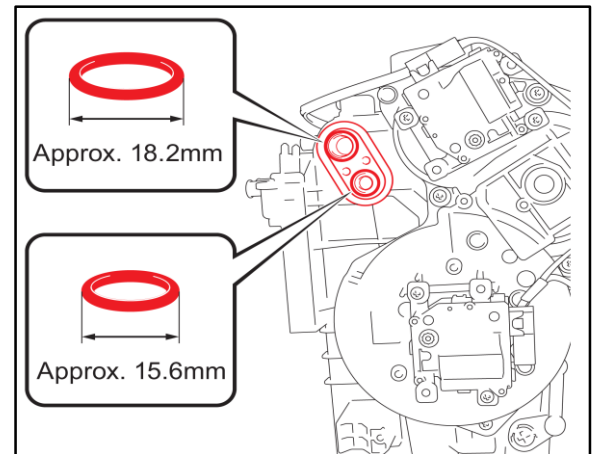
Figure 49.



1	Step
A	Match the Step
B	Cut Off the New Packing

- O. Remove the two O-rings from the cooler evaporator No. 1 and mark and store the removed O-rings in a separate container to avoid reinstalling them in error.

Figure 50.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- P. Apply compressor oil (ND-Oil 8) to the two NEW O-rings and install them onto the cooler evaporator No. 1.

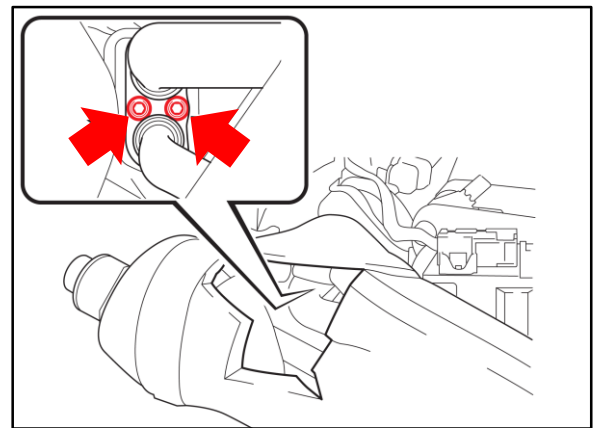
- Q. Install the air conditioner tube and accessory assembly to the cooler evaporator no. 1.

NOTE

Perform the installation with the packing (gray) edge surface spread to ensure the packing (gray) does not get caught in between the joint.
 Use clean hands during the installation otherwise sealing failure will occur.

- R. Reinstall the two hexagon bolts using the 4-mm hexagon wrench.
Torque: 3.5 N*m (36 kgf*cm, 31 in*lbf)

Figure 51.



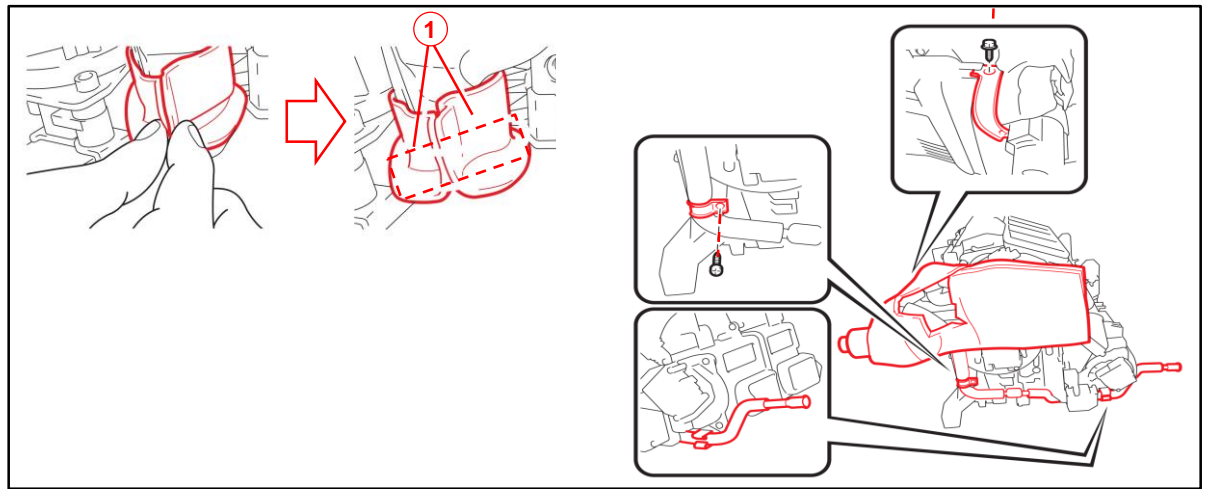
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- S. Firmly attach the packing (gray) to the edge surface so there are no gaps and reconnect the tube and two screws.

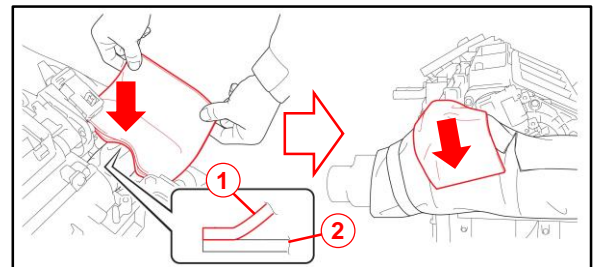
Figure 52.



1	No Gap
---	--------

- T. Attach the NEW packing (black) to match the outer shape of the residual packing (black) and cover the piping.

Figure 53.



1	New Packing
2	Original

- U. Is this the last servo being replaced?
 - **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

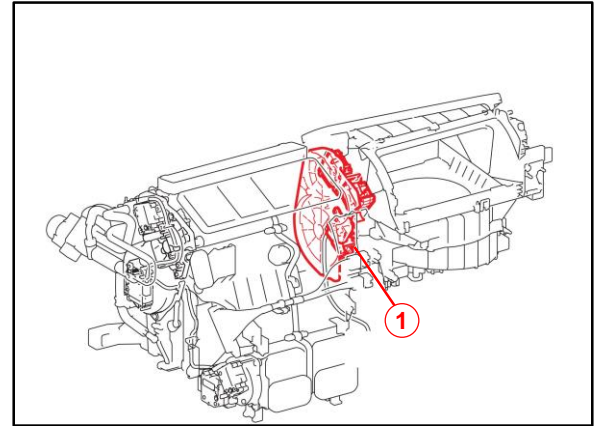
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

2. Remove the passenger side upper damper servo sub-assembly for [2] air mix servo (P), [5] cool air bypass servo, and [7] air outlet servo (P) as they MUST be replaced together.

Figure 54.



1	Replace Together
----------	------------------

- A. Remove the front air conditioning unit assembly.

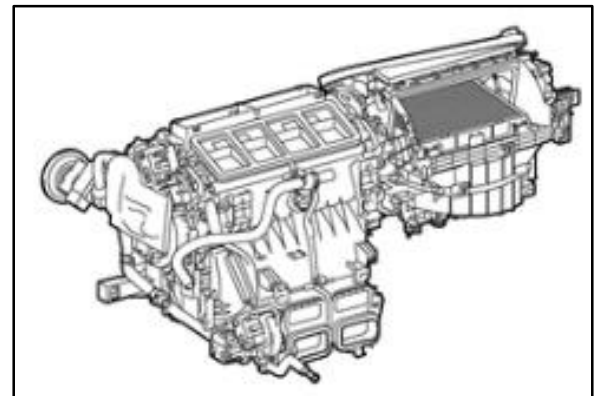
Refer to TIS, applicable model and model year Repair Manual:

- 2016 – 2017 Land Cruiser: *Vehicle Interior – Heating/Air Conditioning* – [“Heating / Air Conditioning: Front Air Conditioning Unit: Removal”](#)

NOTE

Replace the packing for the radiator drain cock even though the repair manual states to reuse.

Figure 55.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- B. Remove the air conditioning harness.

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

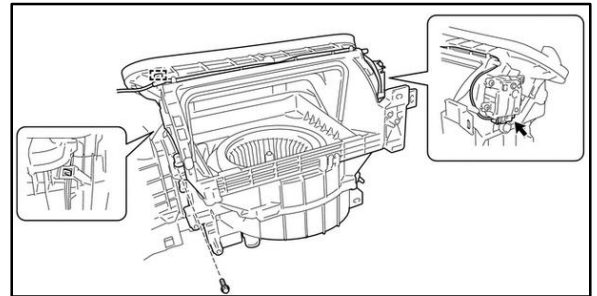
- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Front Air Conditioning Unit: Disassembly”](#)

- C. Remove the blower assembly from the evaporator case.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Blower Unit: Removal”](#)

Figure 56.

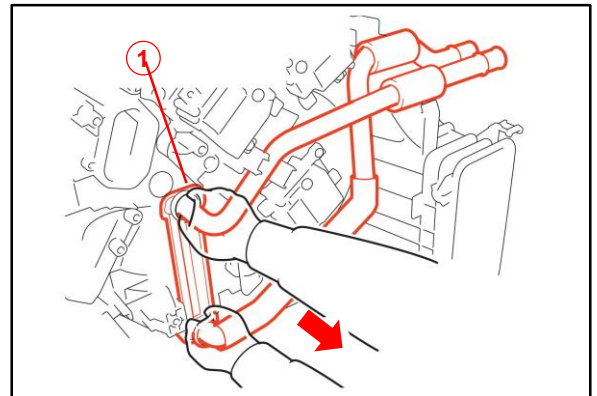


- D. Remove the air conditioning radiator assembly.

STOP

When you remove the air conditioning radiator, make sure to pull it out by holding the connecting portion of the pipe. Otherwise, the coolant may leak out from the connecting portion due to the deformation of the pipe. NEVER hold the pipe when you carry the air conditioning radiator.

Figure 57.



1	Hold the Connection Portion of the Pipe
----------	--

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Front Air Conditioning Unit: Disassembly”](#)

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

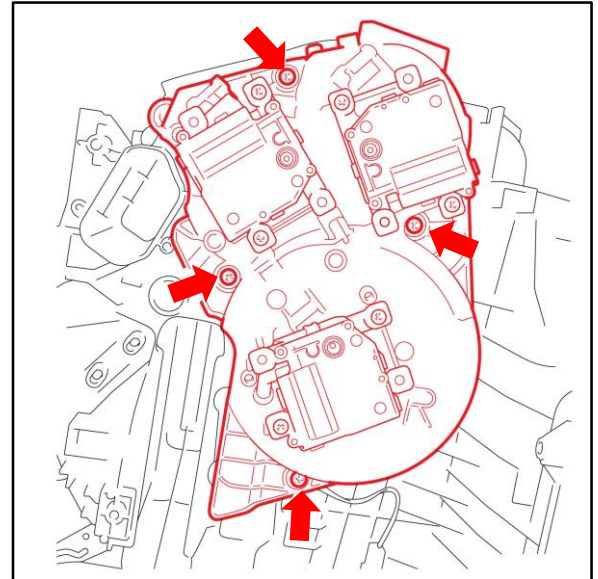
Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- E. Remove the four screws and remove the damper servo sub-assembly.

NOTE

- Do NOT remove the screws installed on the servo body.
- Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

Figure 58.



- F. Mark and store the removed damper servo sub-assembly in a separate container to avoid reinstalling it in error.

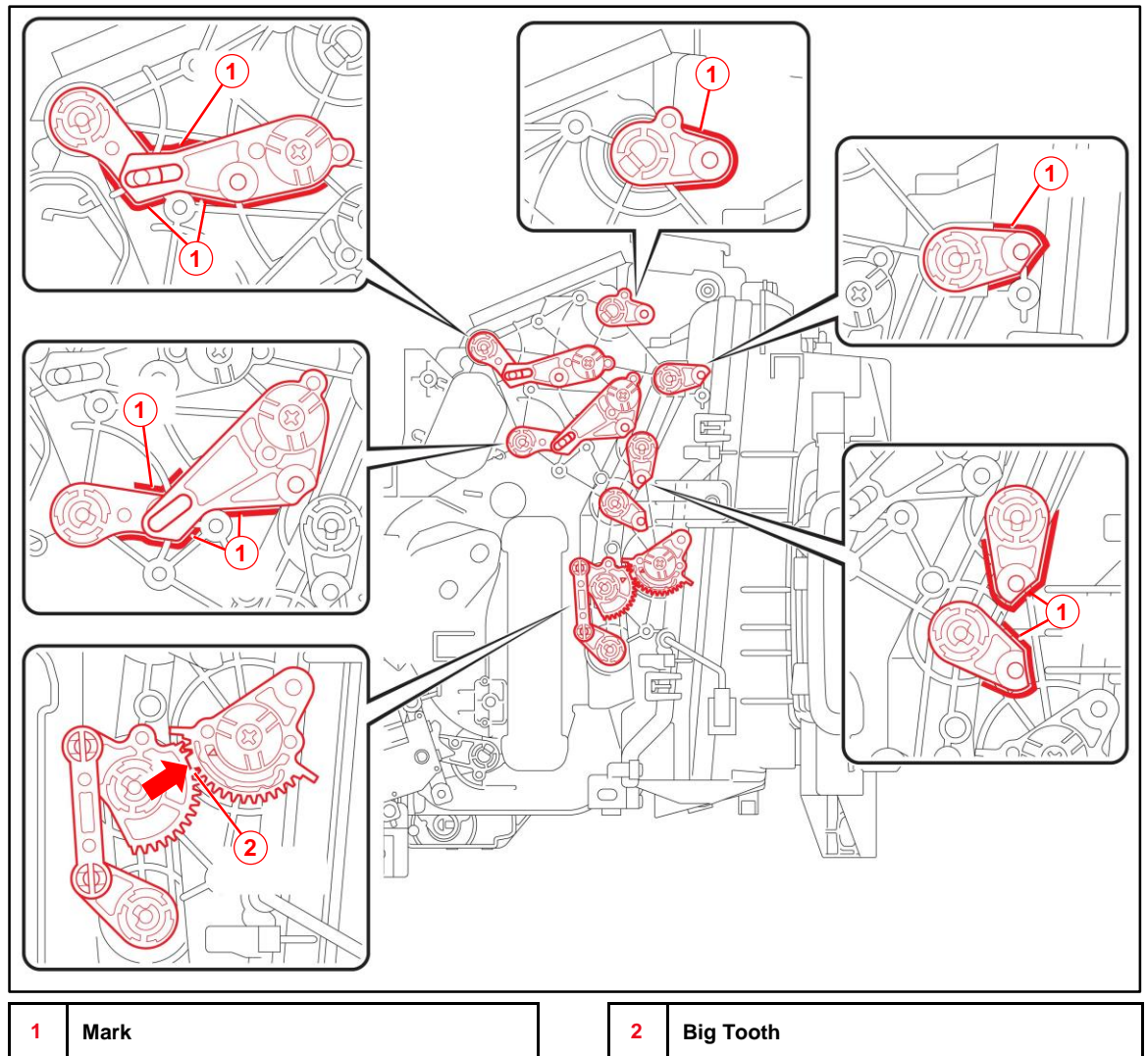
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- G. Install the NEW passenger side upper damper servo sub-assembly [2] air mix servo (P), [5] cool air bypass servo, and [7] air outlet servo (P) by aligning each lever with the corresponding alignment marks stamped on the air conditioning unit.

Figure 59.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

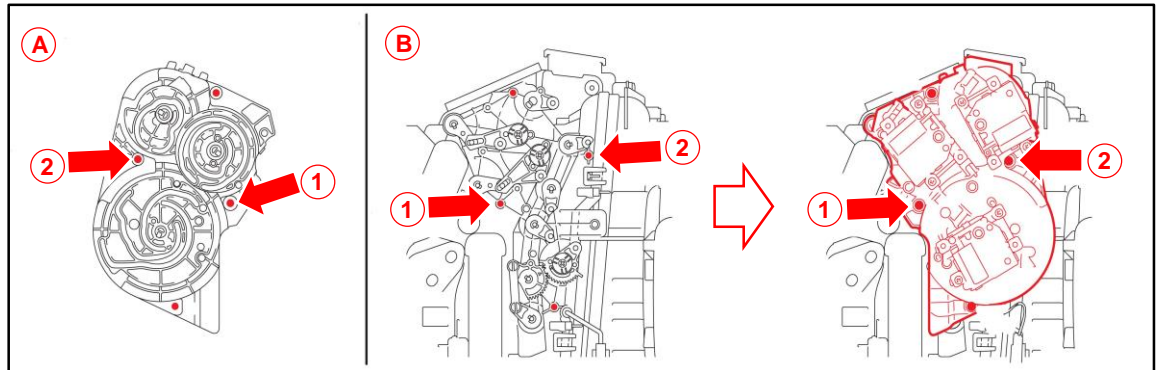
Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- H. Temporarily install the NEW damper servo sub-assembly by engaging the screw installing holes of the damper servo sub-assembly side to the air conditioning radiator side in the order of point 1 then point 2.

NOTE

Be careful NOT to move the levers on the air conditioning radiator side. If a link was moved, reset the position of the link again.

Figure 60.



A	Damper Servo Sub-assembly Side
1	Point 1
2	Point 2

B	Air Conditioning Radiator Side
----------	---------------------------------------

- I. Confirm each link pin is inserted into each corresponding link groove.

CAUTION

The link pins will be misaligned if damper servo sub-assembly is installed using force.

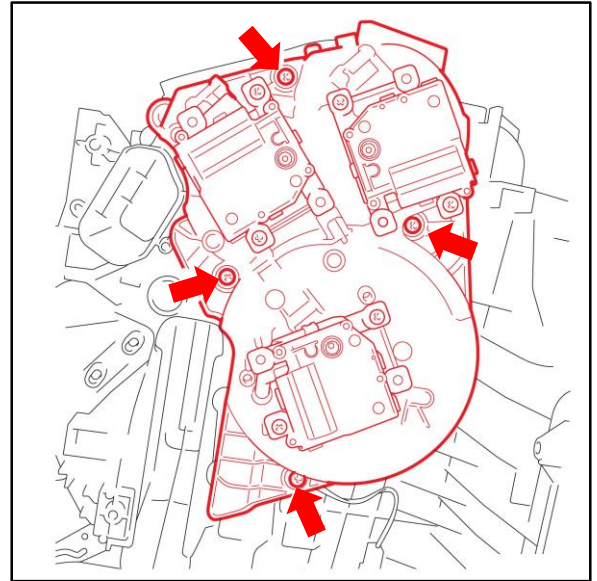
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- J. Install the damper servo sub-assembly with the four screws.

Figure 61.



- K. Is this the last servo being replaced?
- **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

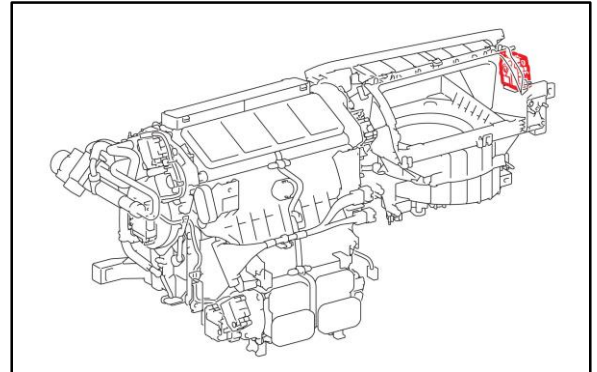
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

3. Remove the blower damper servo sub-assembly for the [4] air inlet damper servo.

Figure 62.

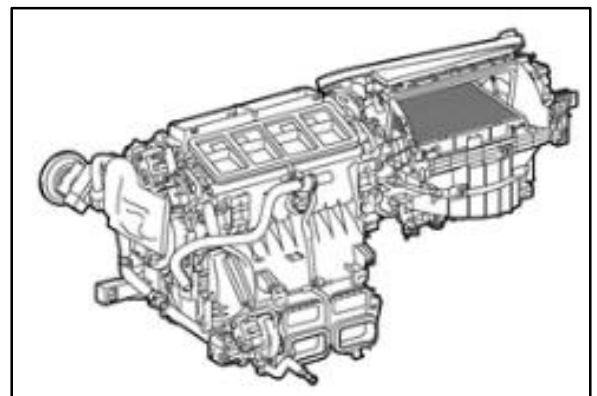


- A. Remove the front air conditioning unit assembly.

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

- 2016 – 2017 Land Cruiser: *Vehicle Interior – Heating/Air Conditioning – “[Heating / Air Conditioning: Front Air Conditioning Unit: Removal](#)”*

Figure 63.

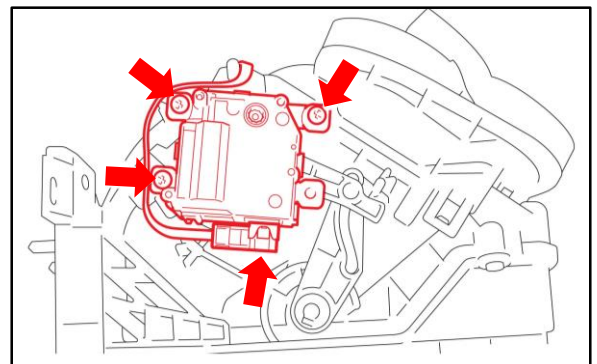


NOTE

Replace the packing for the radiator drain cock even though the repair manual states to reuse.

- B. Disconnect the connector, remove the three screws and the damper servo sub-assembly.

Figure 64.



HVAC Servo Motor Malfunction

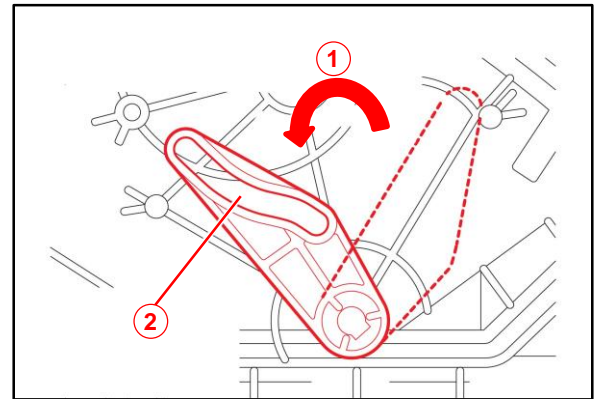
Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- C. Mark and store the removed damper servo sub-assembly in a separate container to avoid reinstalling in it error.

- D. Install the NEW blower damper servo sub-assembly for the air inlet damper servo confirming the lever is in the fresh air position.

Figure 65.



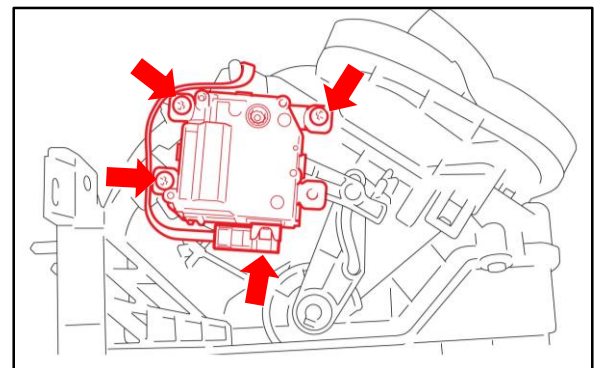
1	Hold the Connection Portion of the Pipe
2	Do Not Wipe the Grease

- E. Install the NEW damper servo sub-assembly with the three screws and install the connector.

STOP

Check that the link pin is inserted into the link groove.

Figure 66.



- F. Is this the last servo being replaced?
 - **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

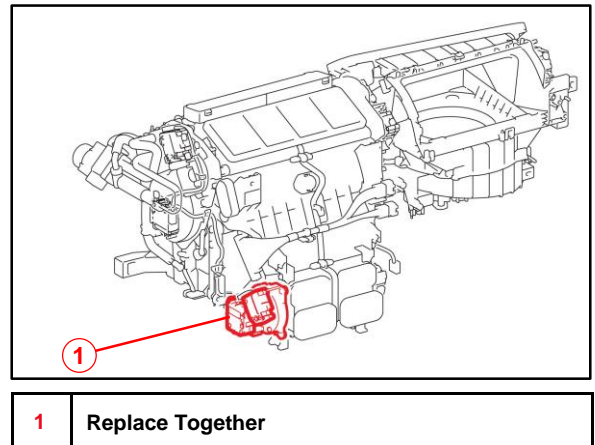
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

4. Remove the driver side lower damper sub-assembly for [8] air mix servo (F & R D) and [10] air outlet servo (F & R D) as they **MUST** be replaced together.

Figure 67.



- A. Remove the front air conditioning unit assembly.

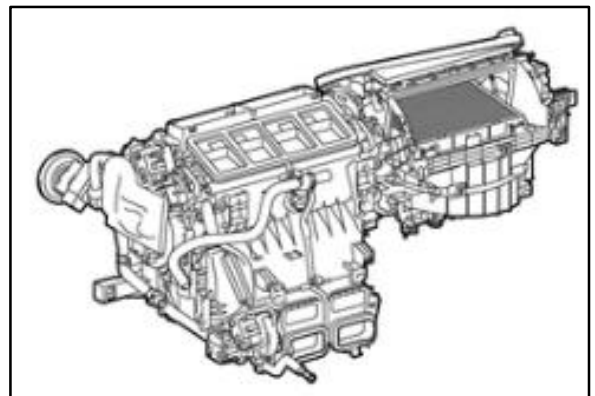
Refer to TIS, applicable model and model year Repair Manual:

- 2016 – 2017 Land Cruiser: Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Front Air Conditioning Unit: Removal”](#)

NOTE

Replace the packing for the radiator drain cock even though the repair manual states to reuse.

Figure 68.



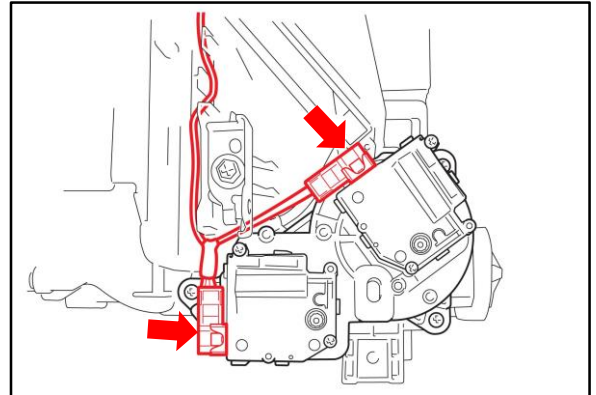
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- B. Disconnect the two connectors.

Figure 69.

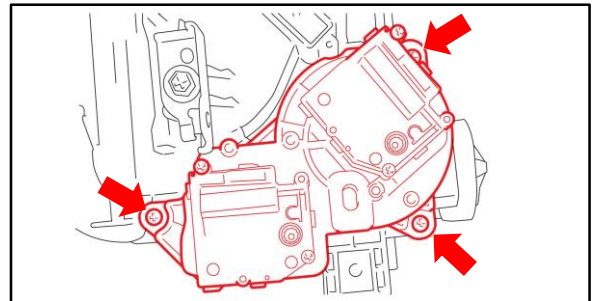


- C. Remove the three screws and damper servo sub-assembly.

NOTE

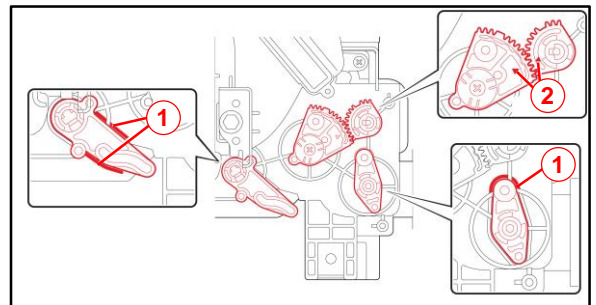
Do NOT remove the screws installed on the servo body.
Reuse the attaching screws. If a screw is lost, order the following: 90099-00968.

Figure 70.



- D. Mark and store the removed damper servo sub-assembly in a separate container to avoid reinstalling it in error.
- E. Install the NEW driver side lower damper servo sub-assembly for air mix servo (F & R D) and air outlet servo (F & R D) by aligning each lever with the corresponding alignment marks stamped on the air conditioning unit.

Figure 71.



1	Mark
2	Match Mark

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

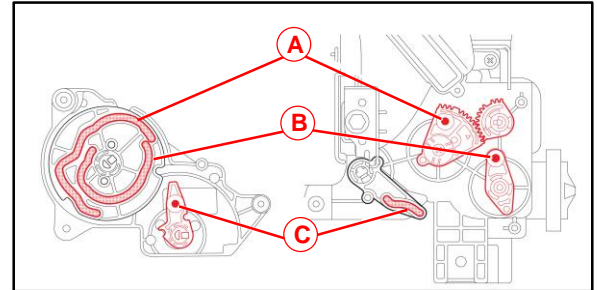
Replacement Procedure Group C (Servo Replaced From the A/C Unit Removed From the Vehicle) (continued)

- F. Temporarily install the NEW damper servo sub-assembly confirming that the position of the link pins and the link groove on the plate side are aligned.

CAUTION

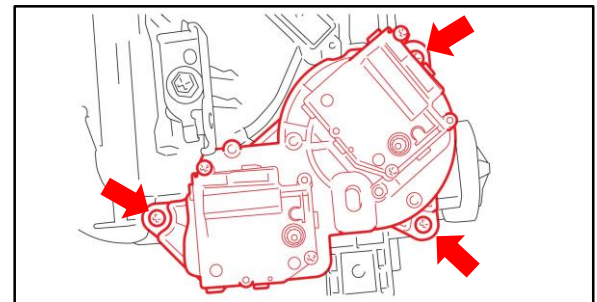
Be careful NOT to move the levers on the air conditioning radiator side. If a link was moved, reset the position of the link again. The link pins will be misaligned if damper servo sub-assembly is installed using force.

Figure 72.



- G. Install the damper servo sub-assembly with the three screws and connect the two connectors.

Figure 73.



- H. Is this the last servo being replaced?
- YES — [Go to the appropriate completion procedure.](#)
 - NO — [Go to the next servo replacement procedure.](#)

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group D (Servo Requiring the Rear A/C Unit Removal From the Vehicle)

[6] Rear Air Mix Servo

1. Remove the rear cooling unit Assembly.
Refer to TIS, applicable model and model year Repair Manual:
 - 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – “[Heating / Air Conditioning: Rear Air Conditioning Unit: Removal](#)”

NOTE

Replace the packing for the radiator drain cock even though the repair manual states to reuse. The replacement of the rear air mix Servo can be performed without removing the rear bumper.

Figure 74.

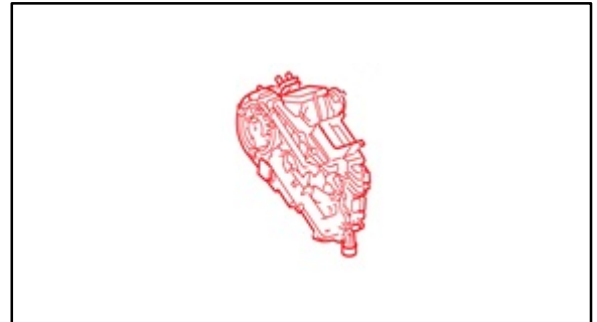
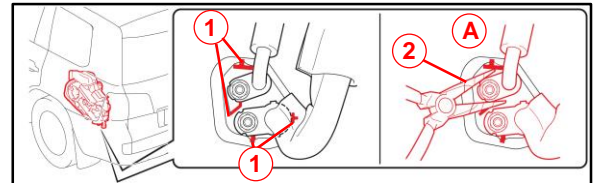


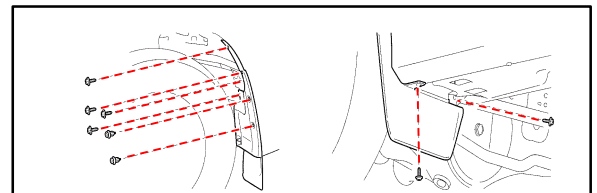
Figure 75.



A	Hold Air Conditioner Tube and Accessory Firmly
1	Convex Portion
2	Protective Tape

- A. Remove the rear quarter panel mudguard LH by removing the six T30 “TORX” screws and removing the two clips.

Figure 76.



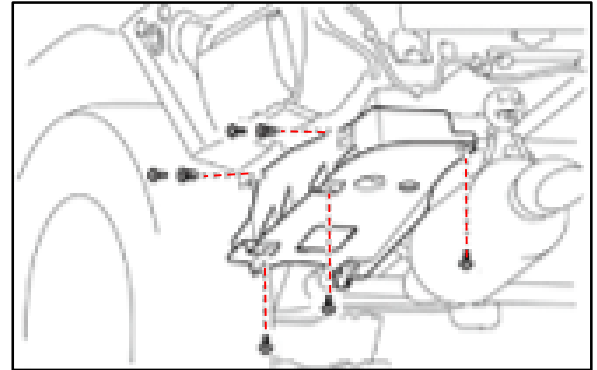
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group D (Servo Requiring the Rear A/C Unit Removal From the Vehicle) (continued)

- B. Remove the No. 2 luggage compartment side cover protector by removing the five screws and two grommets.

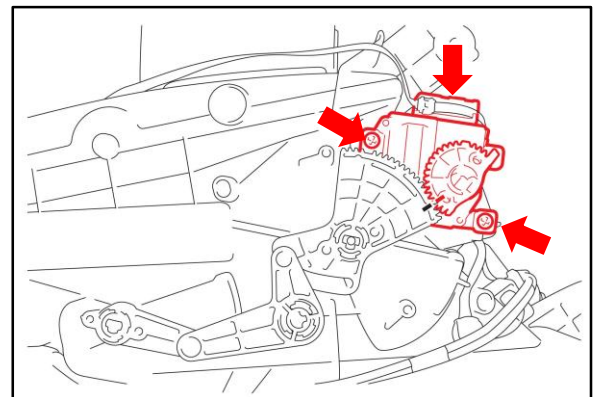
Figure 77.



- C. Mark and store the removed grommets in a separate container to avoid reinstalling it in error.

- D. Remove the rear air mix servo by disconnecting the connector and removing the two screws.

Figure 78.



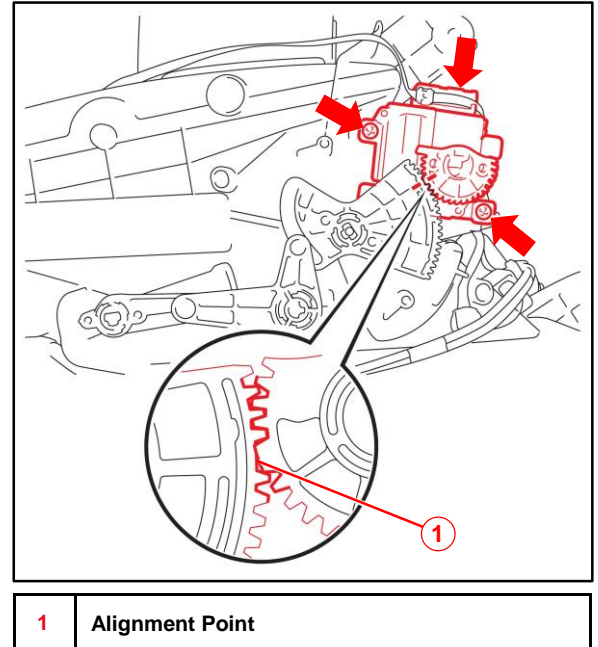
HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Replacement Procedure Group D (Servo Requiring the Rear A/C Unit Removal From the Vehicle) (continued)

- E. Install the NEW air mix servo by aligning the servo as shown in the illustration and install it with the two screws and reconnect the connector.

Figure 79.



- F. Is this the last servo being replaced?
 - **YES** — [Go to the appropriate completion procedure.](#)
 - **NO** — [Go to the next servo replacement procedure.](#)

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Completion Procedure – Group A

1. Reassemble the vehicle in the following order by servo replacement:

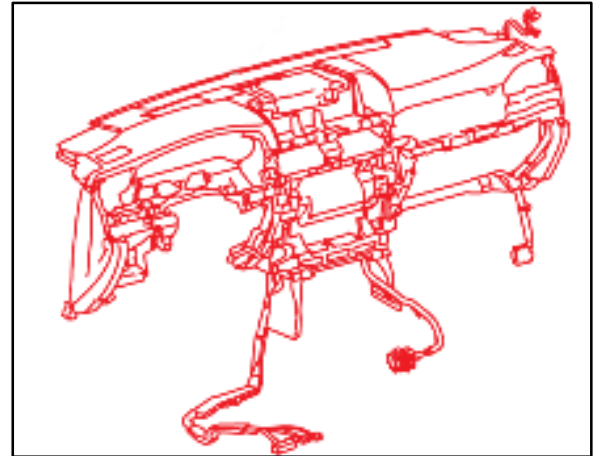
Group A servos:

NUMBER	DTC CODE	PART NUMBER	DESCRIPTION
[1]	B1446	87106-60290	Air Mix Servo (D)
[3]	B1443		Air Outlet Servo (D)
[9]	B1458	87106-50550	Air Mix Servo (F & R P)

2. Reinstall the instrument panel safety pad assembly.
Refer to TIS, applicable model and model year Repair Manual:

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels / Trim
– [“Interior Panels / Trim: Instrument Panel Safety Pad: Installation”](#)

Figure 80.



3. Initialize the servo(s).
Refer to TIS, applicable model and model year Repair Manual:
 - 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning –
[“Heating / Air Conditioning: Air Conditioning System: Initialization”](#)
4. Check for DTCs.

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Completion Procedure – Group B

1. Reassemble the vehicle in the following order by servo replacement:

Group B servos:

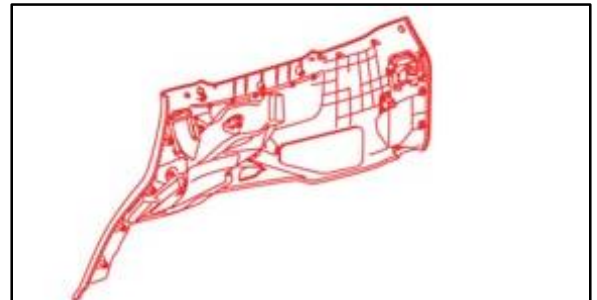
NUMBER	DTC CODE	PART NUMBER	DESCRIPTION
[11]	B1449	87106-58030	Air Outlet Servo (Rr D)
[12]	B1488	87106-60280	Rear Air Mix Servo (P)

2. Reinstall the front quarter trim panel assembly LH.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Installation”](#)

Figure 81.

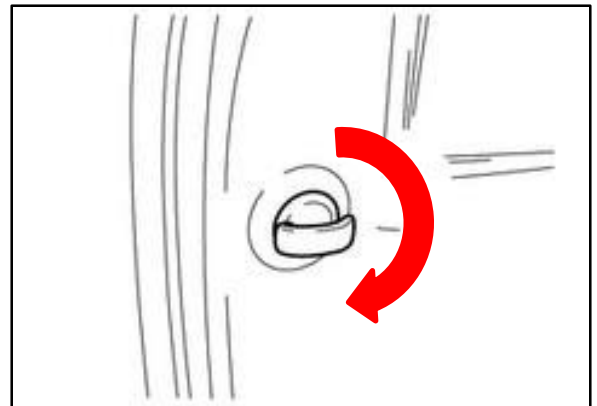


3. Reinstall the No.1 luggage compartment trim hook.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Installation”](#)

Figure 82.



4. Reinstall the rear door scuff plate LH.

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

- 2016 – 2017 Land cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Installation”](#)

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

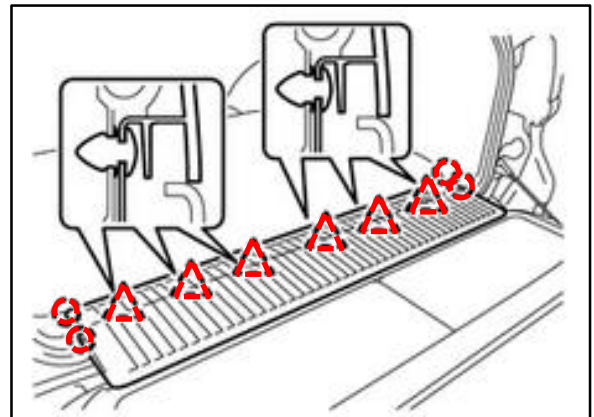
Completion Procedure – Group B (continued)

5. Reinstall the rear floor mat rear support plate.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Interior Panels/Trim –
[“Interior Panels / Trim: Roof Headlining: Installation”](#)

Figure 83.

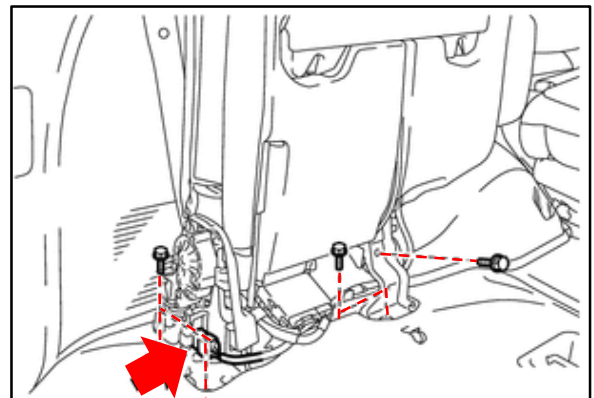


6. Reinstall the rear No. 2 seat assembly LH.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Seat – “[Seat: Rear No. 2 Seat Assembly: Installation](#)”

Figure 84.



7. Initialize the servo(s).

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning –
[“Heating / Air Conditioning: Air Conditioning System: Initialization”](#)

8. Check for DTCs.

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Completion Procedure – Group C

1. Reassemble the vehicle in the following order by servo replacement:

Group C servos:

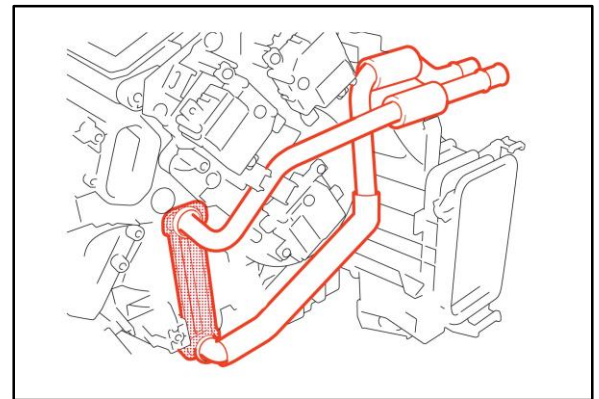
NUMBER	DTC CODE	PART NUMBER	DESCRIPTION
[1]	B1446	87106-60290	Air Mix Servo (D)
[3]	B1443		Air Outlet Servo (D)
[2]	B1441	87106-60310	Air Mix Servo (P)
[5]	B1445		Cool Air Bypass Servo
[7]	B1448		Air Outlet Servo (P)
[8]	B1457	87106-60330	Air Mix Servo (F & R D)
[10]	B1486		Air Outlet Servo (F & R D)
[4]	B1442	87106-50550	Air Inlet Damper Servo

2. Reinstall the air conditioning radiator assembly.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Front Air Conditioning Unit: Reassembly”](#)

Figure 85.



3. Reinstall the air conditioning harness.

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Front Air Conditioning Unit: Reassembly”](#)

HVAC Servo Motor Malfunction

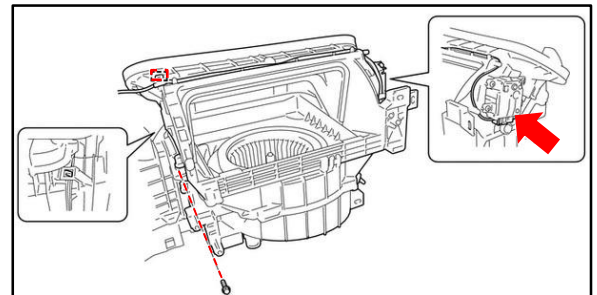
Damper Servo Sub-assembly Replacement Procedure (continued)

Completion Procedure – Group C (continued)

4. Reinstall the blower assembly.
Refer to TIS, applicable model and model year Repair Manual:

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Blower Unit: Installation”](#)

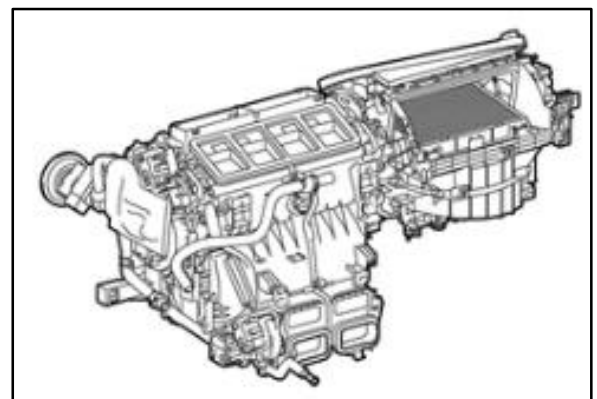
Figure 86.



5. Reinstall the front air conditioning unit assembly.
Refer to TIS, applicable model and model year Repair Manual:

- 2016 – 2017 Land cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Front Air Conditioning Unit: Installation”](#)

Figure 87.



6. Initialize the servo(s).
Refer to TIS, applicable model and model year Repair Manual:
 - 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Air Conditioning System: Initialization”](#)
7. Check for DTCs.

HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Completion Procedure – Group D

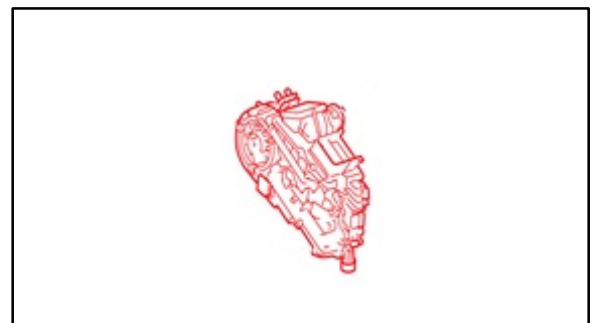
1. Reassemble the vehicle in the following order by servo replacement:

Group D servos:

NUMBER	DTC CODE	PART NUMBER	DESCRIPTION
[6]	B11447	87106-28170	Rear Air Mix Servo

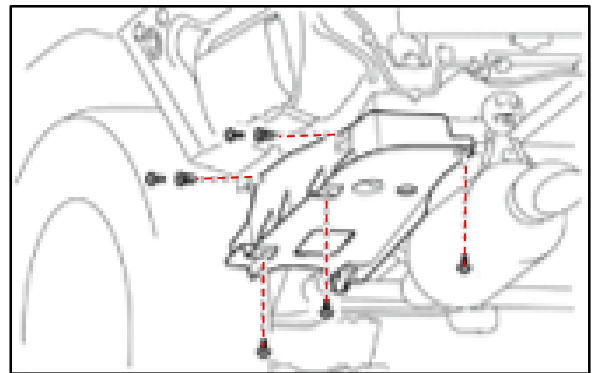
2. Reinstall the rear cooling unit assembly.
Refer to TIS, applicable model and model year Repair Manual:
 - 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning – [“Heating / Air Conditioning: Rear Air Conditioning Unit: Installation”](#)

Figure 88.



3. Reinstall the No. 2 luggage compartment side cover protector with the two NEW grommets and install the six screws.

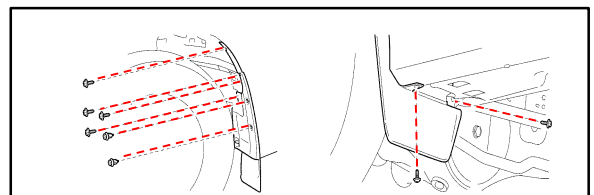
Figure 89.



1	NEW Grommet
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4. Reinstall the rear quarter panel mudguard LH with the two clips and install the six T30 “TORX” screws.

Figure 90.



HVAC Servo Motor Malfunction

Damper Servo Sub-assembly Replacement Procedure (continued)

Completion Procedure – Group D (continued)

5. Initialize the servo(s).

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

- 2016 – 2017 Land Cruiser:
Vehicle Interior – Heating/Air Conditioning –
[“Heating / Air Conditioning: Air Conditioning System: Initialization”](#)

6. Check for DTCs.