Loss of Air Conditioning Cooling With DTC B1423

Service Category Vehicle Interior

Section Heating/Air Conditioning **Market** USA

Toyota Supports ASE Certification

Applicability

YEAR(S)	MODEL(S)	ADDITIONAL INFORMATION
2020	Highlander, Highlander HV	

Introduction

Some 2020 model year Highlander and Highlander Hybrid vehicles may experience a sudden loss of air conditioning cooling with Diagnostic Trouble Code (DTC) B1423 (Open in Pressure Sensor Circuit/Abnormal Refrigerant Pressure) present. Follow the Repair Procedure in this bulletin to address these conditions.

Production Change Information

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

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
Highlander	TMMI (West) Serial Numbers 000001 – 500000	2WD	5TDZZRAH#LS016000
			5TDCZRAH#LS016000
			5TDGZRAH#LS016000
			5TDHZRAH#LS016000
			5TDLZRAH#LS016000
			5TDFZRAH#LS016000
			5TDYZRAH#LS016000

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Production Change Information (continued)

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
Highlander	TMMI (West) Serial Numbers 000001 – 500000	4WD	5TDBZRBH#LS028165
			5TDCZRBH#LS028165
			5TDGZRBH#LS028165
			5TDHZRBH#LS028165
			5TDLZRBH#LS028165
			5TDFZRBH#LS028165
			5TDDZRBH#LS028165
			5TDLZ3BH#LS028165
Highlander HV		2WD	5TDZARAH#LS001754
			5TDGARAH#LS001754
			5TDHARAH#LS001754
			5TDFARAH#LS001754
			5TDYARAH#LS001754
			5TDLA3AH#LS001754
		4WD	5TDBBRCH#LS005771
			5TDGBRCH#LS005771
			5TDHBRCH#LS005771
			5TDFBRCH#LS005771
			5TDDBRCH#LS005771
			5TDEBRCH#LS005771
			5TDXBRCH#LS005771
			5TDLB3CH#LS005771
Highlander	TMMI (East) Serial Numbers 500001 – 999999	2WD	5TDZZRAH#LS508189
			5TDCZRAH#LS508189
			5TDGZRAH#LS508189
			5TDHZRAH#LS508189
			5TDLZRAH#LS508189
			5TDFZRAH#LS508189
			5TDYZRAH#LS508189

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Production Change Information (continued)

MODEL	PLANT	DRIVETRAIN	PRODUCTION CHANGE EFFECTIVE VIN
Highlander	TMMI (East) Serial Numbers 500001 – 999999	4WD	5TDBZRBH#LS513721
			5TDCZRBH#LS513721
			5TDGZRBH#LS513721
			5TDHZRBH#LS513721
			5TDLZRBH#LS513721
			5TDFZRBH#LS513721
			5TDDZRBH#LS513721
			5TDLZ3BH#LS513721
Highlander HV		2WD	5TDZARAH#LS500518
			5TDGARAH#LS500518
			5TDHARAH#LS500518
			5TDFARAH#LS500518
			5TDYARAH#LS500518
			5TDLA3AH#LS500518
		4WD	5TDBBRCH#LS502307
			5TDGBRCH#LS502307
			5TDHBRCH#LS502307
			5TDFBRCH#LS502307
			5TDDBRCH#LS502307
			5TDEBRCH#LS502307
			5TDXBRCH#LS502307
			5TDLB3CH#LS502307

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Warranty Information

OP CODE	DESCRIPTION	TIME	OFP	T1	T2
AC2026	Inspect O-ring Mating Surfaces, Replace O-rings and Pipe Clamp, and Connect Pipe/Tube to Condenser	1.5	884A0-0E010 884A0-48010	7A	57
AC2027	Inspect O-ring Mating Surfaces, Replace Pipe/Tube and Connect to Condenser	1.6			
AC2028	Inspect O-ring Mating Surfaces, and Replace Condenser and Connect Pipe/Tube to Condenser	2.3			
AC2029	Inspect O-ring Mating Surfaces, Replace Condenser, and Replace Pipe/Tube and Connect to Condenser	2.5			

*Choose the correct OFP for the vehicle being repaired by searching the parts in EPC using the EPC VIN filter. Warranty claims must be submitted with the correct OFP with 10 digits.

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.**

Parts Information

PART NUMBER	PART NAME	QTY
88718-1E150	Clamp, Piping	1
884A0-0E010	Condenser Assembly, Cooler (Gas)	1
884A0-48010	Condenser Assembly, Cooler (Hybrid)	1
88710-0E480	Tube Assembly, Air Conditioning (Gas)	1
88710-0E610	Cooler Refrigerant Liquid Pipe A (Hybrid)	1
08885-81240	ND-Oil 12 or equivalent (Gas)	1
08885-09127	ND-Oil 11 or equivalent (Hybrid)	1

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Required Tools & Equipment

SPECIAL SERVICE TOOLS (SST)	PART NUMBER	QTY
High Side A/C Line Disconnect Tool*	09870-00025	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.

Repair Procedure

1. Does the vehicle exhibit a sudden loss of air conditioning cooling?
   - **YES –** Continue to step 2.
   - **NO –** This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

2. Using Techstream, check for DTC B1423 (Open in Pressure Sensor Circuit/Abnormal Refrigerant Pressure). Is DTC B1423 present?
   - **YES –** Continue to step 3.
   - **NO –** This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.

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Repair Procedure (continued)

3. Using a mirror, is the liquid pipe quick connection connected to the condenser fitting?
   - **YES –** This bulletin does NOT apply. Continue diagnosis using the applicable Repair Manual.
   - **NO –** Continue to step 4 to inspect the air conditioning tube assembly (Highlander) or cooler refrigerant liquid pipe A (Highlander Hybrid).

4. Recover ANY remaining refrigerant from the system and disassemble the front of the vehicle to gain access to the connection of the air conditioning tube assembly (Highlander) or cooler refrigerant liquid pipe A (Highlander Hybrid) to the lower portion of the condenser. Follow the steps below for condenser assembly removal.

   NOTE

   Not all steps are required to gain access to the air conditioning tube assembly or cooler refrigerant liquid pipe A connection.

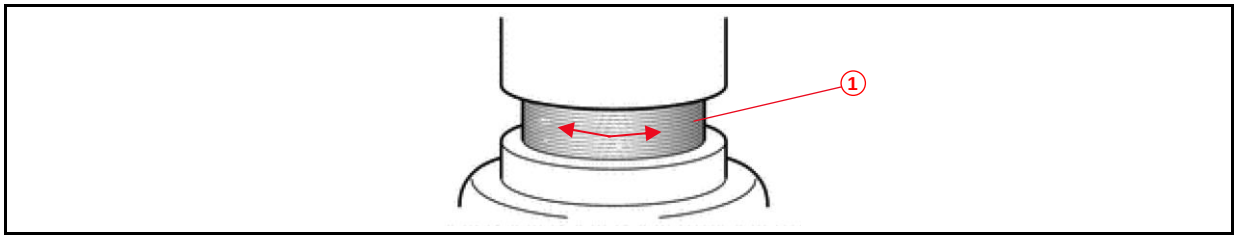
   Refer to TIS, applicable model and model year Repair Manual:

   - 2020 Highlander and Highlander Hybrid:
     Vehicle Interior – Heating/Air Conditioning – "Heating / Air Conditioning Condenser: Removal"

5. Remove the piping clamp and the two O-rings if the piping clamp remains attached to the air conditioning tube assembly or cooler refrigerant liquid pipe A, where it connects to the condenser assembly.

6. Inspect the air conditioning tube assembly or cooler refrigerant liquid pipe A O-ring surfaces for ANY damage or abnormalities as shown below.

Figure 1. OK Condition – Pipe Replacement NOT Needed



1	**Light Scratching Parallel With O-ring Groove Caused by Normal Part Processing**

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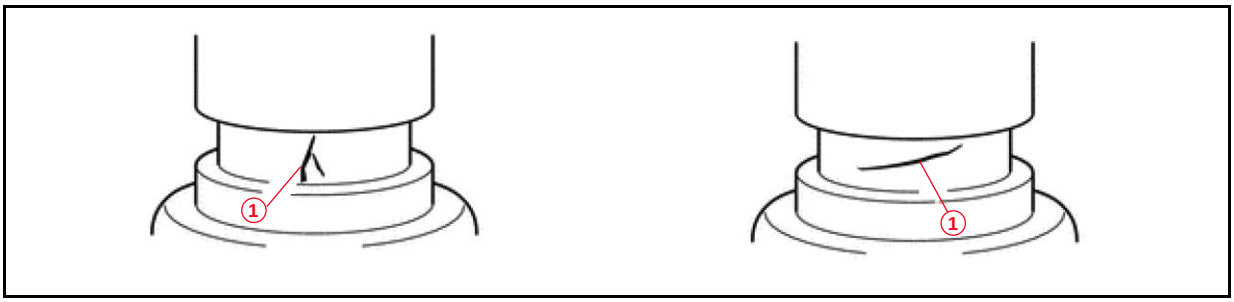
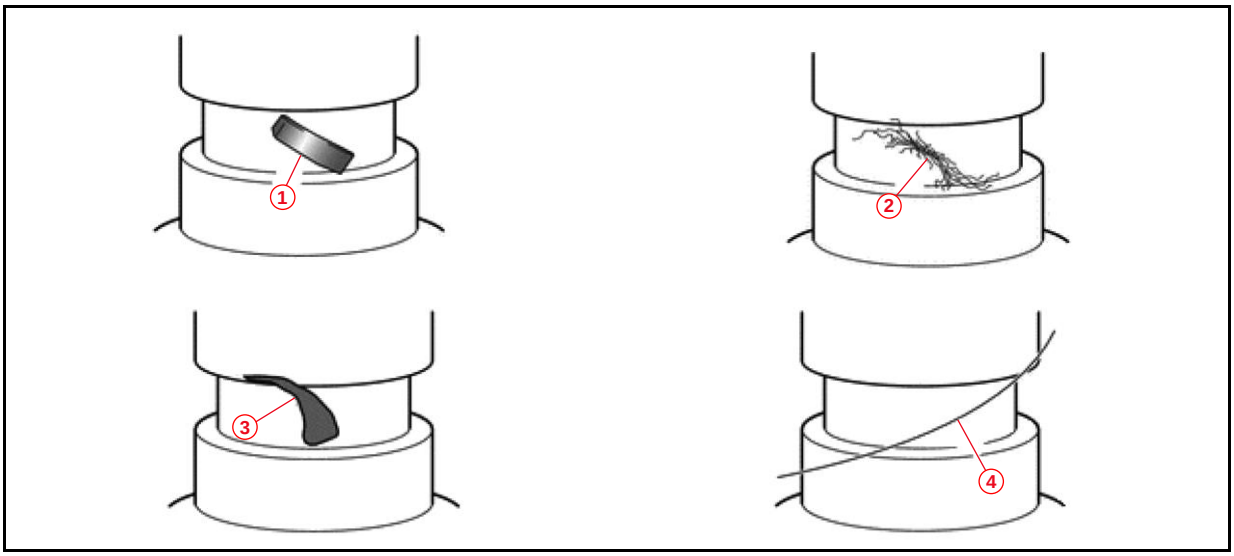
Repair Procedure (continued)

Figure 2. Damage Condition – Pipe Replacement Recommended



1	Damage – Deep Scratching or Gouge of Base Metal

Figure 3. Foreign Matter – Pipe Replacement NOT Needed (Clean Using Non-metallic Tool)



1	Metal Fragment
3	Resin Fragment

2	Lint
4	Hair

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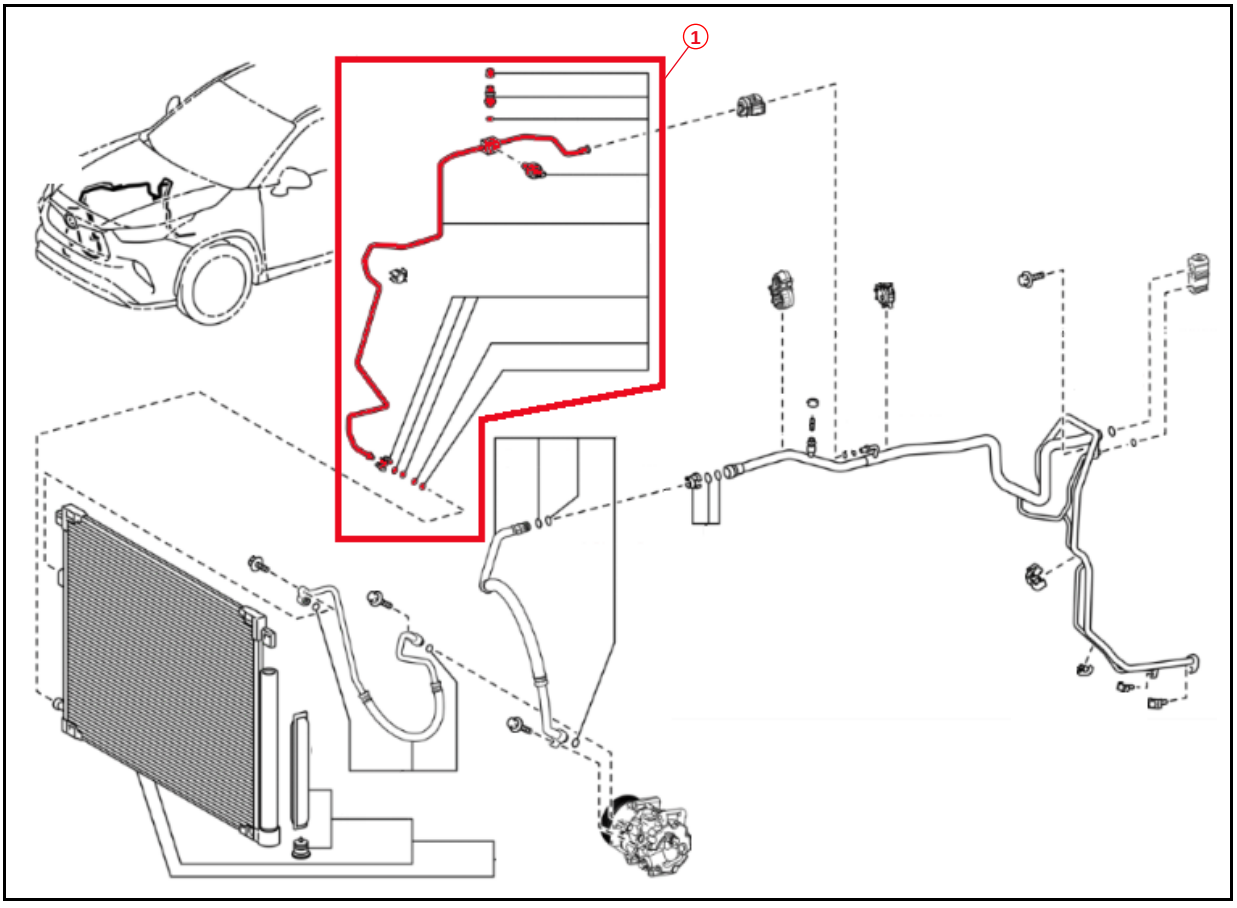
Repair Procedure (continued)

7. Did the inspection show ANY damage or abnormalities in the O-ring surfaces?
   - **YES –** Proceed as follows:
     - For Highlander vehicles continue to step 8.
     - For Highlander Hybrid vehicles go to step 10.
   - **NO –** Go to step 12.

8. Remove the air conditioning tube assembly (Highlander).

> NOTE
>
> Some steps may not be required if the air conditioning tube assembly was already disconnected from the condenser assembly, and the piping clamp and O-rings were removed in previous steps.

Figure 4.



1	**Air Conditioning Tube Assembly**

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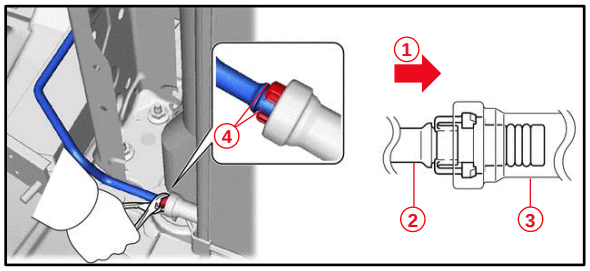
Repair Procedure (continued)

A. While pressing the end of the air conditioning tube assembly into the end of the condenser assembly, use pliers to squeeze together both sides of the piping clamp until it breaks apart.

NOTICE

- **If ANY foreign matter is attached to the connecting parts, brush it off or use compressed air to remove it BEFORE disconnecting the parts.**
- **Make sure that fragments of the piping clamp do NOT enter the piping.**

Figure 5.



1	Press In
2	Air Conditioning Tube Assembly
3	Condenser Assembly
4	Piping Clamp

B. Disconnect the air conditioning tube assembly from the condenser assembly.

NOTICE

Remove ANY foreign matter from the connecting parts of the air conditioning tube assembly and condenser assembly.

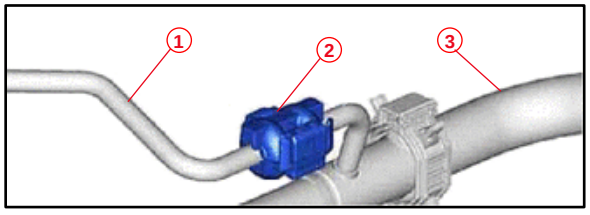
C. Remove the two O-rings from the air conditioning tube assembly.

NOTICE

Remove ANY foreign matter from the connecting parts of the air conditioning tube assembly and condenser assembly.

D. Remove the piping clamp attached to the air conditioning tube assembly to the No. 2 air conditioning tube and accessory assembly.

Figure 6.



1	Air Conditioning Tube Assembly
2	Piping Clamp
3	No. 2 Air Conditioner Tube and Accessory Assembly

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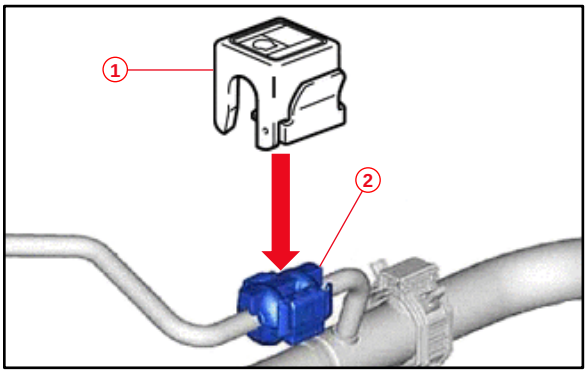
Repair Procedure (continued)

E. Install the high side air conditioning line disconnect tool to the piping clamp.

Figure 7.



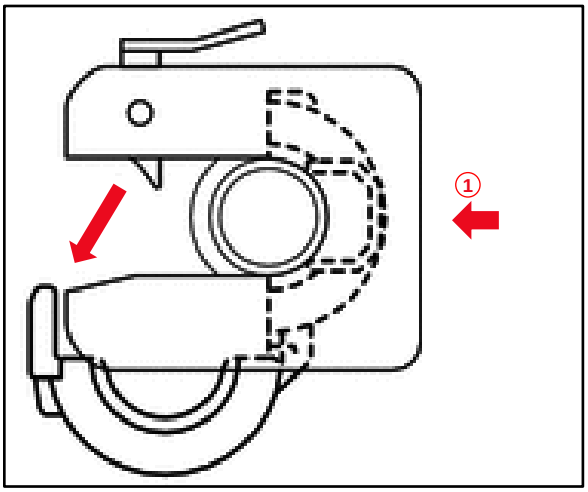
1	High Side Air Conditioning Line Disconnect Tool
2	Piping Clamp

F. Holding the No. 2 air conditioner tube and accessory assembly in one hand, and the air conditioning tube assembly in the other hand, push in the high side air conditioning line disconnect tool with both thumbs.

NOTICE

Do NOT apply excessive force to the No. 2 air conditioner tube and accessory assembly or air conditioning tube assembly, as they may bend.

Figure 8.



1	Push In

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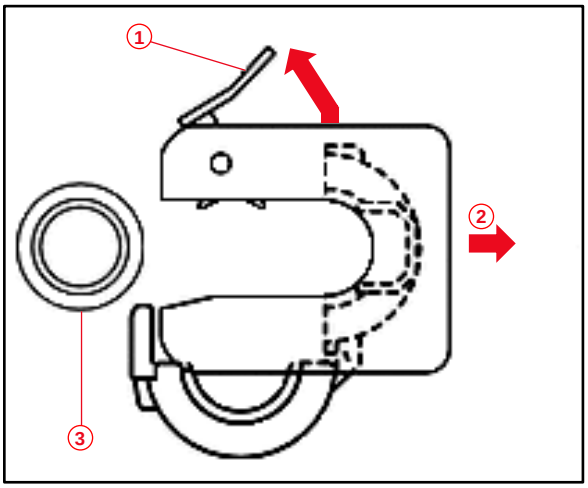
Repair Procedure (continued)

G. Raise the stopper of the high side air conditioning line disconnect tool and remove together the high side air conditioning line disconnect tool and the piping clamp from the No. 2 air conditioner tube and accessory assembly.

NOTICE

- **If ANY foreign matter is attached to the connecting parts, brush it off or use compressed air to remove it BEFORE disconnecting the parts.**
- **Make sure that piping clamp fragments do NOT enter the piping.**

Figure 9.



1	Stopper
2	Pull off
3	Air Conditioning Tube Assembly

H. Remove the piping clamp from the high side air conditioning line disconnect tool.

NOTICE

Remove ANY foreign matter from the connecting parts of the air conditioning tube assembly and the No. 2 air conditioner tube and accessory assembly.

I. Remove the air conditioning tube assembly from the No. 2 air conditioning tube and accessory assembly.

NOTICE

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

J. Disconnect the connector from the pressure sensor.

K. Disengage the air conditioning tube assembly from the holder and remove it from the vehicle.

9. Install the NEW air conditioning tube assembly (Highlander).

A. Remove the protective cap or vinyl tape from the air conditioning tube assembly and the No. 2 air conditioner tube and accessory assembly.

B. Sufficiently apply compressor oil ND-oil 12, or equivalent, to the two NEW O-rings and the fitting surfaces of the No. 2 air conditioner tube and accessory assembly.

C. Install the two new O-rings to the No. 2 air conditioner tube and accessory assembly.

NOTICE

Keep the O-rings and O-ring fitting surfaces free from dirt and foreign matter.

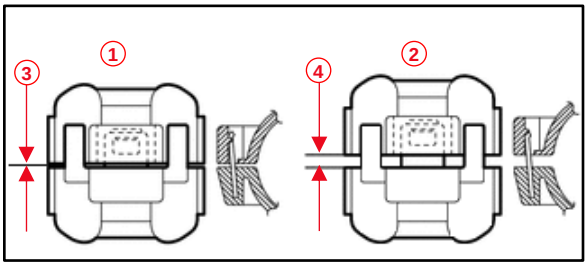
D. Connect the air conditioning tube assembly to the No. 2 air conditioner tube and accessory assembly.

E. Install the piping clamp to the air conditioning tube assembly.

NOTE

Make sure that the piping clamp is engaged securely with no gap.

Figure 10.



1	Correct
2	Incorrect
3	No Gap
4	Gap

F. Reconnect the connector to the pressure sensor.

G. Go to step 12.

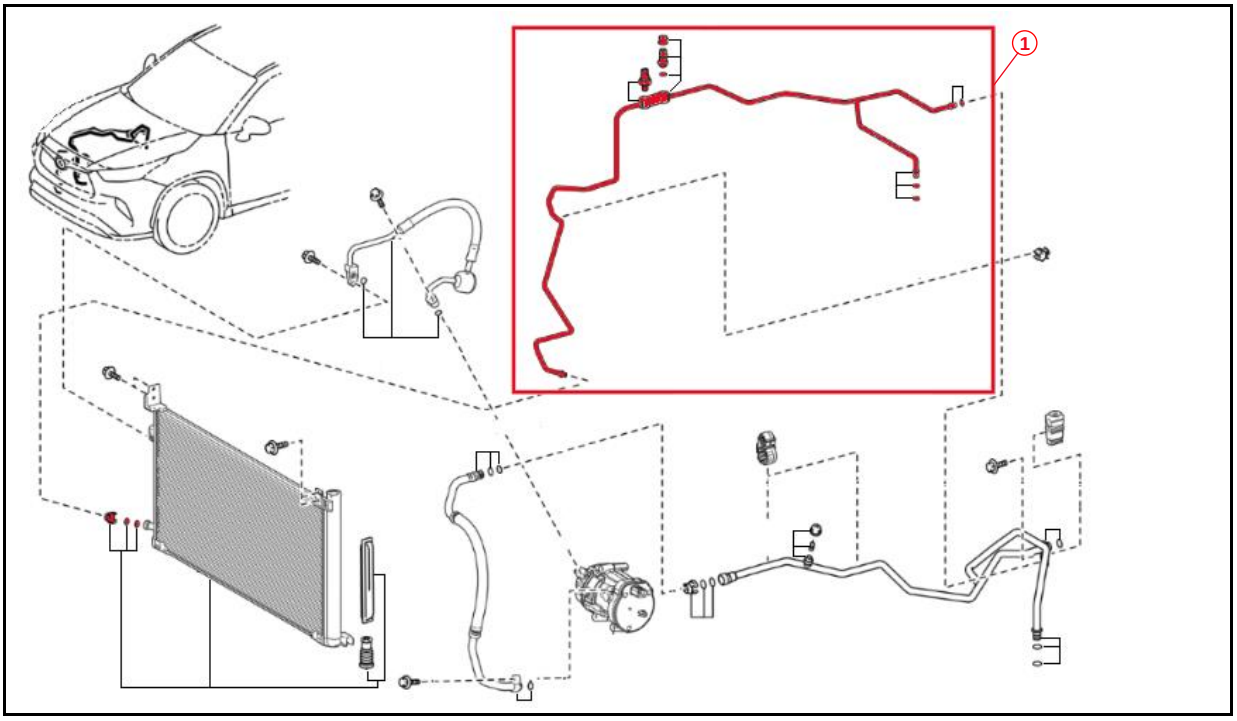
Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

10. Remove the cooler refrigerant liquid pipe A (Highlander Hybrid).

> NOTE
>
> Some steps may not be required if the cooler refrigerant liquid pipe A was already disconnected from the condenser assembly and the piping clamp and O-rings were removed in previous steps.

Figure 11.



1	**Cooler Refrigerant Liquid Pipe A**

Loss of Air Conditioning Cooling With DTC B1423

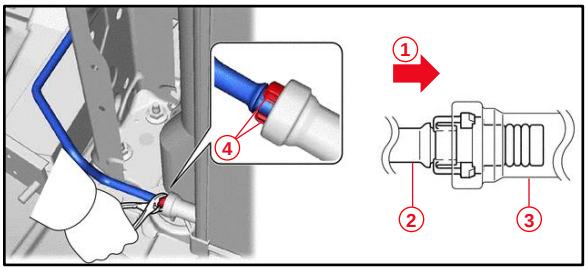
Repair Procedure (continued)

A. While pressing the end of the cooler refrigerant liquid pipe A into the end of the condenser assembly, use pliers to squeeze together both sides of the piping clamp until it breaks apart.

NOTICE

- **If ANY foreign matter is attached to the connecting parts, brush it off or use compressed air to remove it BEFORE disconnecting the parts.**
- **Make sure that fragments of the piping clamp do NOT enter the piping.**

Figure 12.



1	Press In
2	Cooler Refrigerant Liquid Pipe A
3	Condenser Assembly
4	Piping Clamp

B. Disconnect the cooler refrigerant liquid pipe A.

NOTICE

Remove ANY foreign matter from the connecting parts of the cooler refrigerant liquid pipe A and condenser assembly.

C. Remove the two O-rings from the cooler refrigerant liquid pipe A.

NOTICE

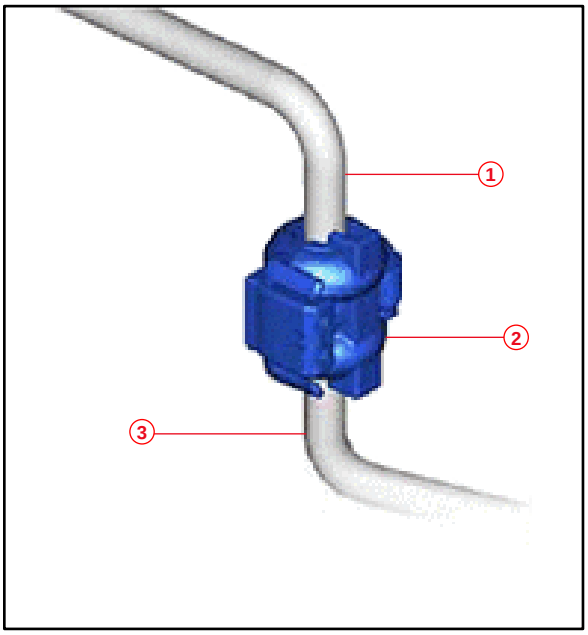
Seal the openings of the disconnected parts with vinyl tape to prevent entry of moisture and foreign matter.

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

D. Remove the piping clamp attached to the cooler refrigerant liquid pipe A from the No.1 air conditioning accessory assembly.

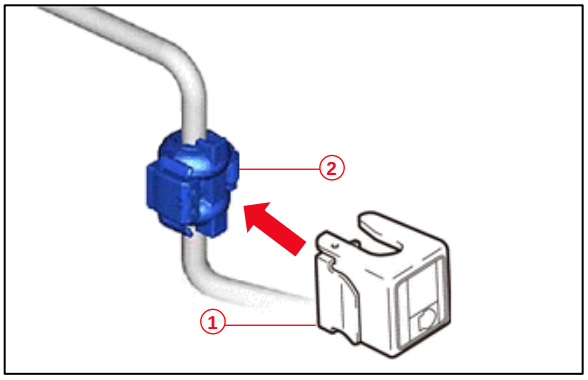
Figure 13.



1	Cooler Refrigerant Liquid Pipe A
2	Piping Clamp
3	No.1 Air Conditioning Accessory Assembly

E. Install the high side air conditioning line disconnect tool to the piping clamp.

Figure 14.



1	High Side Air Conditioning Line Disconnect Tool
2	Piping Clamp

Loss of Air Conditioning Cooling With DTC B1423

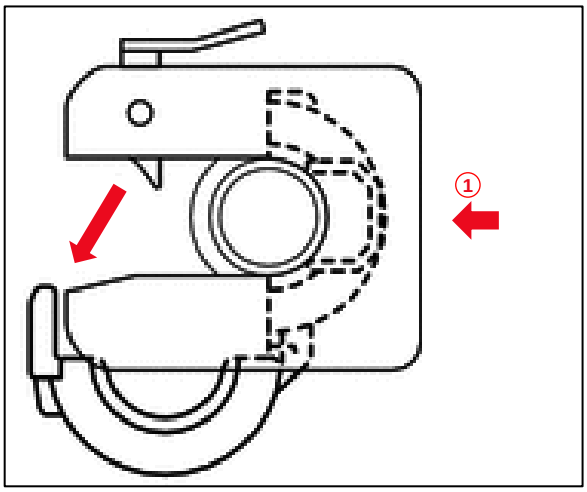
Repair Procedure (continued)

F. Holding the cooler refrigerant liquid pipe A in one hand and the No. 1 air conditioning accessory assembly in the other hand, push in the high side air conditioning line disconnect tool with both thumbs.

NOTICE

Do NOT apply excessive force to the cooler refrigerant liquid pipe A or No. 1 air conditioning accessory assembly, as they may bend.

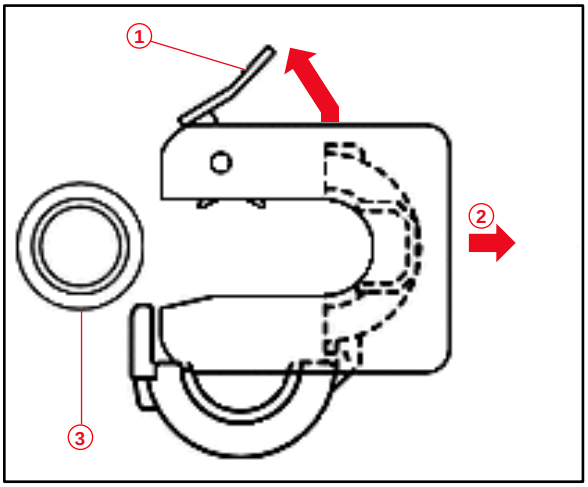
Figure 15.



1	Push In

G. Raise together the high side air conditioning line disconnect tool stopper AND the piping clamp from the No. 1 Air conditioning accessory assembly.

Figure 16.



1	Stopper
2	Pull off
3	No. 1 Air Conditioning Accessory Assembly

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

H. Remove the piping clamp from the high side air conditioning line disconnect tool.

NOTICE

Remove ANY foreign matter from the connecting parts of the No. 1 air conditioning accessory assembly and cooler refrigerant pipe A.

I. Remove the cooler refrigerant pipe A from the No. 1 air conditioning accessory assembly.

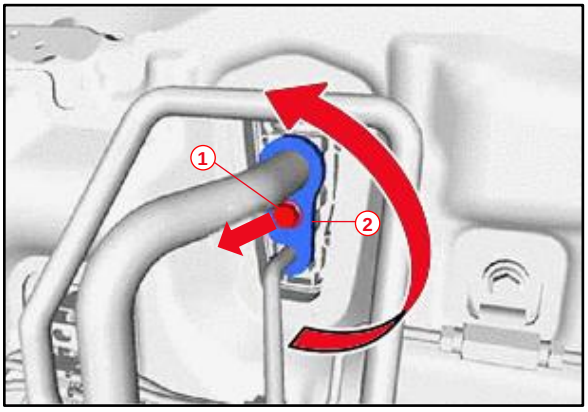
NOTICE

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

J. Disconnect the connector from the pressure sensor.

K. Remove the bolt and rotate the hook connector.

Figure 17.



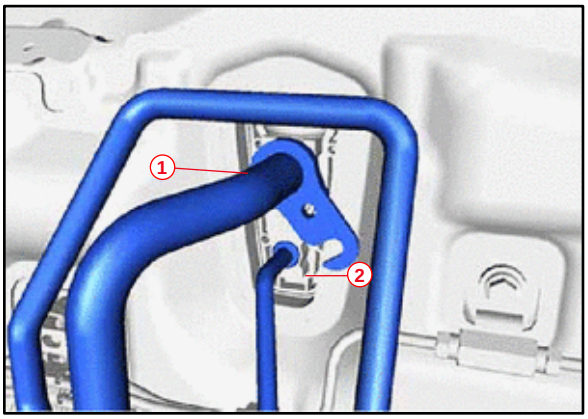
1	Bolt
2	Hook Connector

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

L. Disconnect the suction pipe sub-assembly from the expansion valve.

Figure 18.



1	Suction Pipe Sub-assembly
2	Expansion Valve

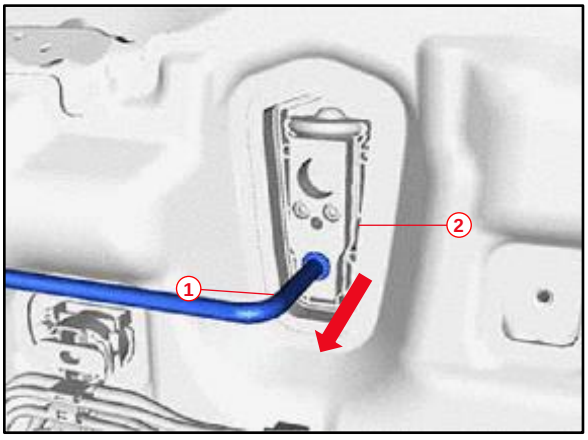
M. Remove the O-ring from the suction pipe sub-assembly.

NOTICE

Seal the openings of the disconnected parts using vinyl tape to prevent entry of moisture and foreign matter.

N. Disconnect the cooler refrigerant liquid pipe A from the expansion valve.

Figure 19.



1	Cooler Refrigerant Liquid Pipe A
2	Expansion Valve

O. Remove the cooler refrigerant liquid pipe A from the vehicle.

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

11. Install the NEW cooler refrigerant liquid pipe A (Highlander Hybrid).

A. Remove the protective cap or vinyl tape from the cooler refrigerant liquid pipe A.

B. Sufficiently apply compressor oil ND-oil 11, or equivalent, to a NEW O-ring and the fitting surface of the cooler refrigerant liquid pipe A.

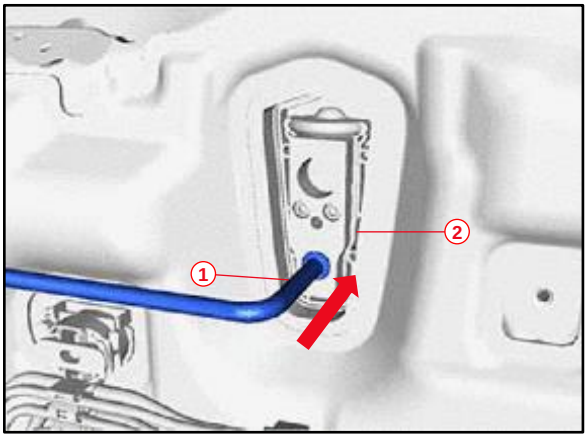
C. Install the O-ring to the cooler refrigerant liquid pipe A.

NOTICE

Keep the O-ring and O-ring fitting surfaces free from dirt and foreign matter.

D. Connect the cooler refrigerant liquid pipe A to the expansion valve.

Figure 20.



1	Cooler Refrigerant Liquid Pipe A
2	Expansion Valve

E. Remove the vinyl tape from the suction pipe sub-assembly.

F. Sufficiently apply compressor oil ND-oil 11, or equivalent, to a NEW O-ring and the fitting surface of the suction pipe sub-assembly.

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

G. Install the O-ring to the suction pipe sub-assembly.

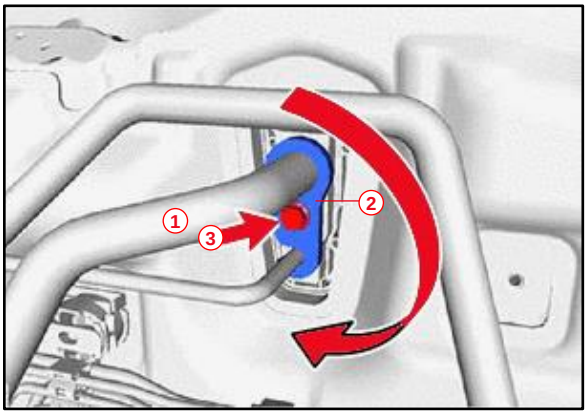
> **NOTICE**
>
> **Keep the O-ring and O-ring fitting surface free of foreign matter.**

H. Connect the suction pipe sub-assembly and rotate the hook connector.

I. Install the bolt.

Torque: 9.8 N*m (100 kgf*cm, 87*in·lbf)

Figure 21.



1	Suction Pipe Sub-assembly
2	Hook Connector
3	Bolt

J. Remove the protective cap or vinyl tape from the cooler refrigerant liquid pipe A and No. 1 air conditioning accessory assembly.

K. Sufficiently apply compressor oil ND-oil 11, or equivalent, to two NEW O-rings and the cooler refrigerant liquid pipe A fitting surfaces.

L. Install the two NEW O-rings to the cooler refrigerant liquid pipe A.

> **NOTICE**
>
> **Keep the O-ring and O-ring fitting surface free from dirt and foreign matter.**

M. Connect the cooler refrigerant liquid pipe A to the No. 1 air conditioning accessory assembly.

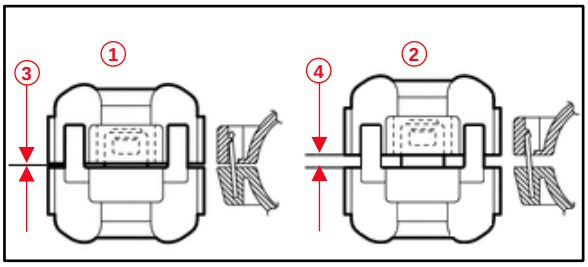
Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

N. Install the piping clamp to the No. 1 air conditioning accessory assembly.

> NOTE
>
> Make sure that the piping clamp is engaged securely with NO gap.

Figure 22.

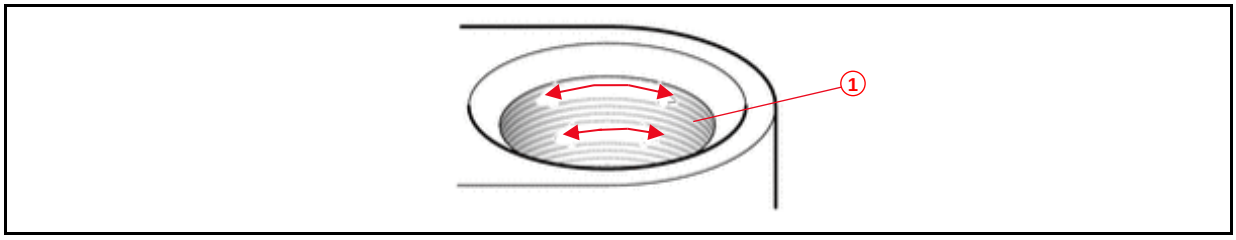


1	Correct
2	Incorrect
3	No Gap
4	Gap

O. Reconnect the connector to the pressure switch.

12. Inspect the condenser assembly O-ring surface for ANY damage or abnormalities as shown below.

Figure 23. OK Condition – Condenser Assembly Replacement NOT Needed



1	Light Scratching Parallel With O-ring Groove (Caused by Normal Part Processing)

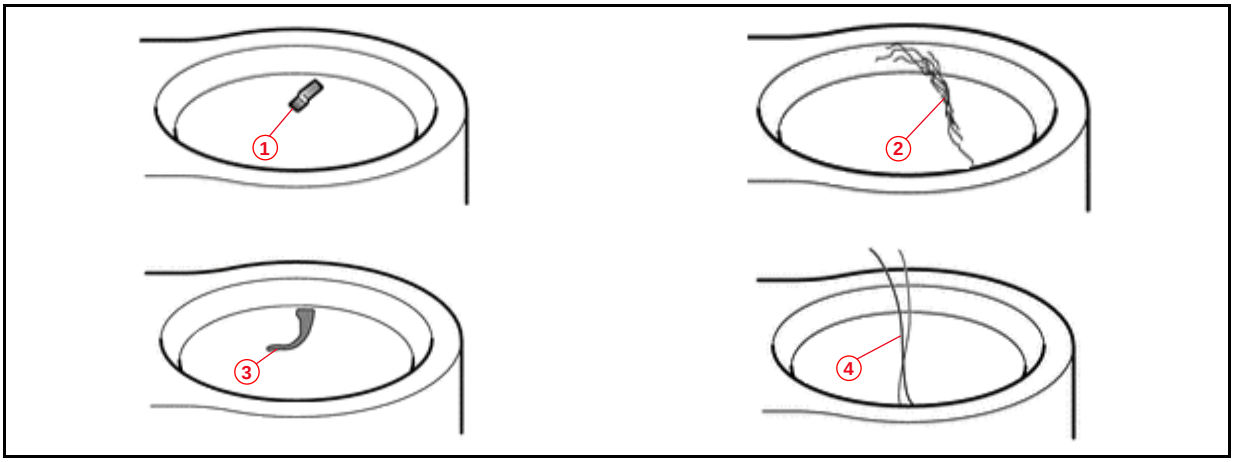
Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

Figure 24. Damage Condition – Condenser Assembly Replacement Recommended

1	Deep Scratching Perpendicular to the O-ring Groove

Figure 25. Foreign Matter – Pipe Replacement NOT Needed (Clean Using Non-metallic Tool)



1	Metal Fragment
3	Resin Fragment

2	Lint
4	Hair

A. Did the inspection show ANY damage or abnormalities in the O-ring surfaces?

- **YES –** Continue to step 13.
- **NO –** Go to step 15.

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Repair Procedure (continued)

13. Remove the condenser assembly.
    Refer to TIS, applicable model and model year Repair Manual:
    - 2020 Highlander and Highlander Hybrid:
      Vehicle Interior – Heating/Air Conditioning – "Heating / Air Conditioning Condenser: Removal"

14. Install the NEW condenser assembly.
    Refer to TIS, applicable model and model year Repair Manual:
    - 2020 Highlander and Highlander Hybrid:
      Vehicle Interior – Heating/Air Conditioning – "Heating / Air Conditioning Condenser: Installation"

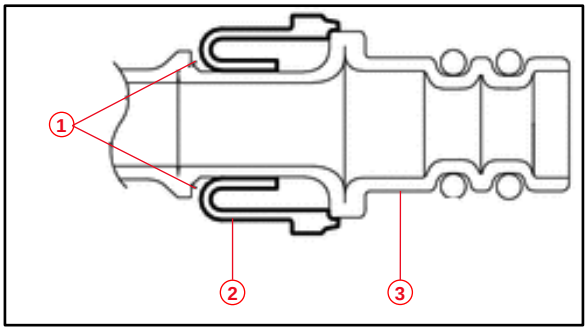
15. Remove the protective cap or vinyl tape from the condenser assembly and air conditioning tube assembly (Highlander) or the cooler refrigerant liquid pipe A (Highlander Hybrid).

16. If a NEW piping clamp is not already installed, install a NEW piping clamp to the air conditioning tube assembly or cooler refrigerant liquid pipe A.

NOTICE

- **Securely engage the piping clamp to the groove of the air conditioning tube assembly/cooler refrigerant pipe A.**
- **Do NOT open the piping clamp more than the diameter of the air conditioning tube assembly/cooler refrigerant pipe A when installing it.**
- **Do NOT install the piping clamp with the large diameter section facing the wrong direction.**

Figure 26.



1	Groove
2	Piping Clamp
3	Air Conditioning Tube Assembly or Cooler Refrigerant Pipe A

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

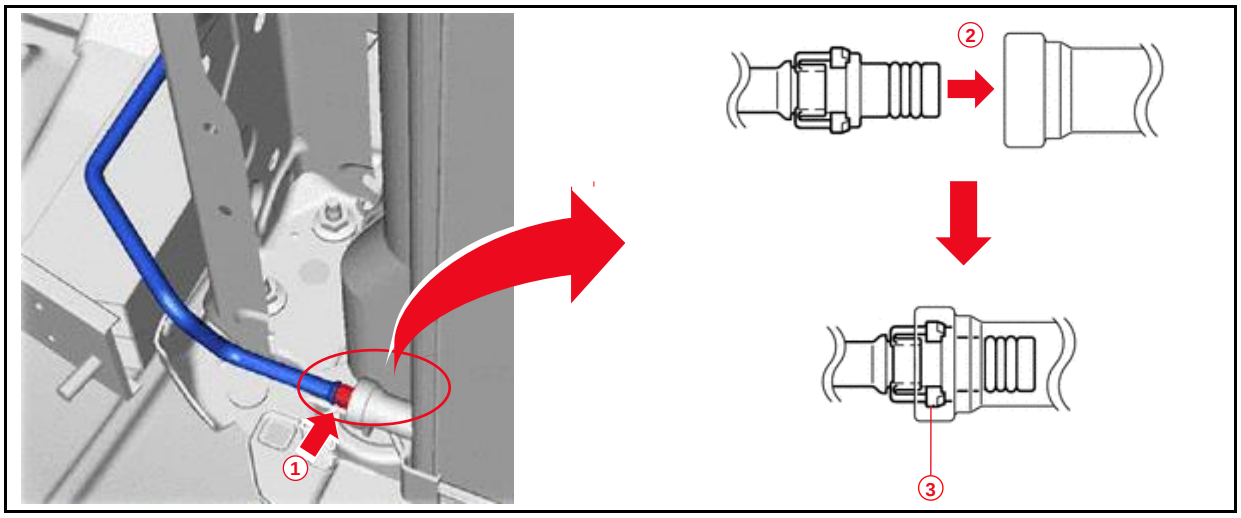
17. Sufficiently apply compressor oil ND-oil 12 or equivalent (Highlander) or ND-oil 11 or equivalent (Highlander Hybrid) to two NEW O-rings and the fitting surfaces of the air conditioning tube assembly or cooler refrigerant liquid pipe A.

18. Install the two NEW O-rings to the air conditioning tube assembly or the cooler refrigerant liquid pipe A.

> **NOTICE**
>
> **Keep the O-ring and O-ring fitting surfaces free from foreign matter.**

19. Connect the air conditioning tube assembly or cooler refrigerant liquid pipe A to the condenser assembly.

Figure 27.



1	Large Diameter Section of Piping Clamp
2	Insert the Tube or Pipe to the Condenser Fitting
3	Connection Shown Fully Seated

Loss of Air Conditioning Cooling With DTC B1423

Repair Procedure (continued)

20. Securely insert the piping clamp to the point where the large diameter section of the piping clamp is covered by the air conditioning tube assembly (Highlander) or cooler refrigerant liquid pipe A (Highlander Hybrid) to the condenser assembly.

    HINT
    - When inserting, make sure that a click sound is heard.
    - Rotate the piping clamp to ensure that it has fully seated.
    - Check that the condenser assembly is securely connected by pulling it.

21. Did the connection of the piping clamp fully seat and connect to the condenser assembly?
    - **YES –** Continue to step 22.
    - **NO –** Go back to step 13 and replace the condenser assembly.

22. Reassemble the vehicle using the steps for condenser assembly installation.
    Refer to TIS, applicable model and model year Repair Manual:
    - 2020 Highlander and Highlander Hybrid:
      Vehicle Interior – Heating/Air Conditioning – "Heating / Air Conditioning Condenser: Installation"

23. Clear ANY DTCs and confirm normal air conditioning function operation.