TSB-STO2023-003: Coolant Line Securing Around Transfer Case

Rev07212023

Overview:

This document steps you through how to inspect the coolant lines in the area of concern to verify what repairs are needed, if any, to prevent coolant leaks. Failure to inspect and repair properly as needed could result in loss of coolant and, as a result, vehicle damage. Please contact Storyteller should you have any questions or need any assistance with these instructions.

Safety Alert:

Do not perform these steps unless you feel comfortable doing so. The following inspection will be performed under the van where components are likely to be hot. Only perform these steps once the van has had adequate time to cool down. Exercise extreme caution when attempting to perform these steps. Reach out to Storyteller Overland should you have any questions or concerns.

Flat Rate: 30 minutes

Applicable Vehicles:

All STO Mercedes Sprinter AWD MODEs

Tools and Supplies Needed:

- For Inspection:
  - Flashlight
  - camera (if needed)
- For only zip tie repair:
  - Flush Cutters
  - (2) high-temp heavy duty zip ties*

* Parts required for repair will be provided, as needed, by STO once photo proof of issue/damage is provided.

Diagnostic Procedure:

1. Park the van in a safe area with adequate room to access underneath the van. Allow the van to cool down to a safe working temperature. **NOTE: Inspection will be performed under the van where components are likely to be hot after driving. Only proceed to the next step once the van has had adequate time to cool down. Exercise extreme caution when attempting to perform these steps.**
2. Inspect coolant lines under van
    a. Locate the Rixen heat exchanger that is mounted to the chassis frame just behind the driver side front tire as shown in figure 1.
    b. Follow the (2) coolant lines from the right side of the heat exchanger toward the center of the chassis and between the transmission and battery box. See figure 1
    c. Closely inspect the coolant lines at the rear inboard corner of the battery box next to the transfer case as shown in figure 2. Check whether the coolant lines are touching or able to touch the transfer case. Figure 2 shows an example of what is NOT GOOD. We do not want the coolant lines to be able to touch the transfer case at all. **Check for any signs of chafing, wear or damage to the coolant lines in this area and note what is found on the Coolant Line Securing Checklist at the end of this document.**

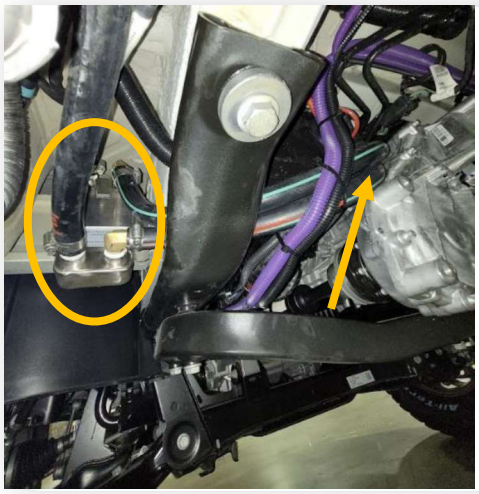


Figure 1

Locate Rixen heat exchanger under the van circled in the figure. Follow the (2) coolant lines between the transmission and battery box as pointed out with an arrow.

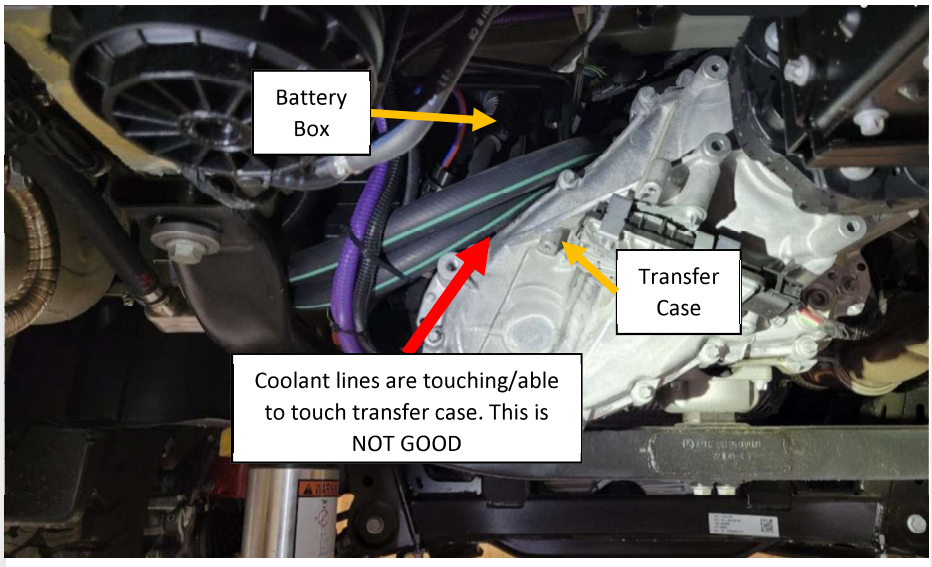


Figure 2

d. Continue to follow the coolant lines toward the front of the van. Closely inspect the (2) coolant lines in the area between the battery box and the transmission from the transfer case to the front differential above the front drive shaft. **Verify there is a heavy duty zip tie around the coolant lines above the transfer case in front of the white routing mount for the fuel lines and there are at least (2) additional zip ties around the coolant lines securing them to the chassis frame above the front drive shaft so that the coolant lines are not allowed to contact the front drive shaft, transmission or transfer case. See figures 3a and 3b.**

e. **Check for any signs of chafing, wear or damage to the coolant lines in this area and note what is found on the Coolant Line Securing Checklist at the end of this document.**

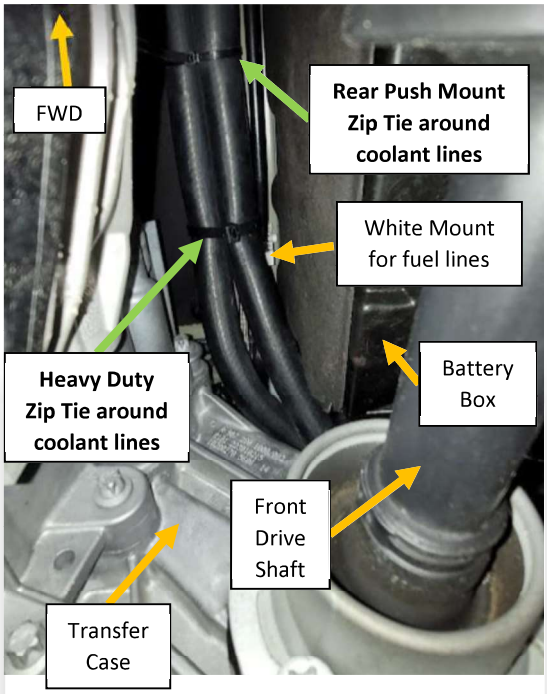


Figure 3a

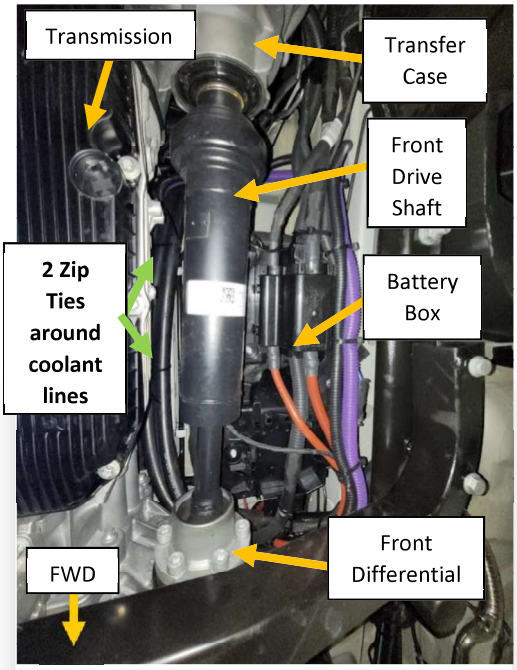


Figure 3b

f. If your coolant lines are <u>not secured</u> with zip ties and/or if your coolant lines appear to be <u>damaged</u> in any way, document the issues seen in the checklist and take photos of the damaged/unsecured coolant lines.

3. If no issues or concerns are found, complete the checklist at the end of this document, return a copy to warranty@storytelleroverland.com and continue to EXPLORE ENDLESSLY!
4. If coolant lines are not secured and/or damage is found
   a. Complete the checklist at the end of this document and take photos of the issues found. Send the completed checklist and photos to warranty@storytelleroverland.com to receive repair parts as necessary.
   b. **If coolant lines were not damaged but need to be secured**, follow the repair steps in the section below once repair parts have been received.
   c. **If the coolant lines have damage**, additional repair instructions will be provided along with the additional repair parts.

Repair Procedure:

5. If the coolant lines did not show signs of wear or damage when inspected during the steps above and simply need to be zip tied to prevent future risk, proceed to step 6 once repair parts have been received. Note: Some locations may already have zip ties as detailed in the steps below. You may either leave the current zip ties in place or replace them following each step below.
6. Thread (1) of the zip tie mounts onto each of the (2) smaller zip ties so the head of the zip tie faces the same direction as the push mount. See figure 4.



Figure 4

7. Install a push mount (once threaded onto the zip tie) into each of the (2) holes in the chassis frame on the underside of the floor located between the transmission and battery box as pointed out in figure 5a. Make sure the push mounts are pressed fully into each hole to provide a secure hold.
8. Position the coolant lines up against the frame so they are prevented from making contact with the front drive shaft. Wrap each zip tie around both coolant hoses and secure the zip ties so they are snug against the coolant lines but will not restrict coolant flow. See figure 5b
9. Cut off the excess end of the zip tie using a pair of cutters and ensure the coolant lines do not and are not able to make contact with the front drive shaft or any moving component.



Figure 5a

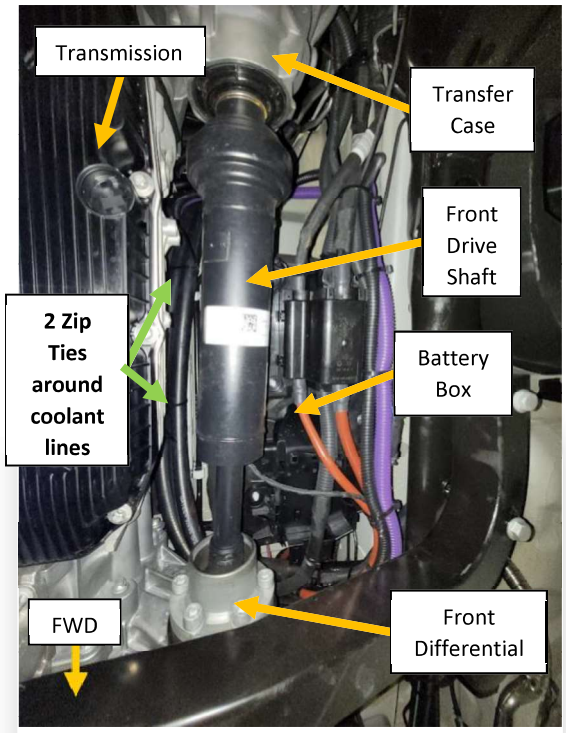


Figure 5b

10. Secure 1 heavy duty zip tie around the coolant lines and the hole in the chassis frame member just in front of the white chassis hose mount that is located between the battery box and the transfer case and above the front driveshaft on the underside of the van body floor. NOTE: Be sure to not bundle the fuel lines that are routed through the white mount with this zip tie. It is easiest to feed the zip tie between the fuel lines and the frame member first, then through the hole in the frame member and then around the coolant lines to secure. See figure 6

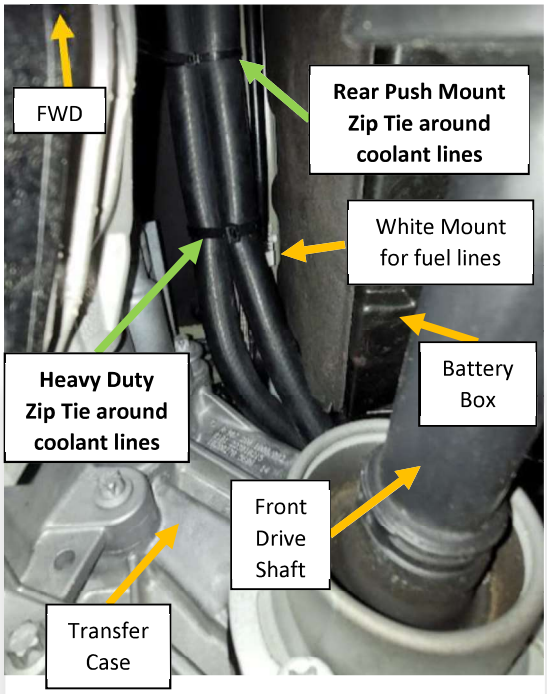


Figure 6

11. Cut off the excess end of the zip tie using a pair of cutters and ensure the coolant lines do not and are not able to make contact with the front drive shaft or transfer case in this area.
12. Add the 2nd heavy duty zip tie around the coolant lines and the negative (black) battery cable that comes out the rear inboard corner of the battery box. Position the zip tie toward the top of the battery cable so it pulls the coolant lines away from the transfer case considerably as shown in figure 7.
13. Reach out to STO should you have any further questions or concerns.

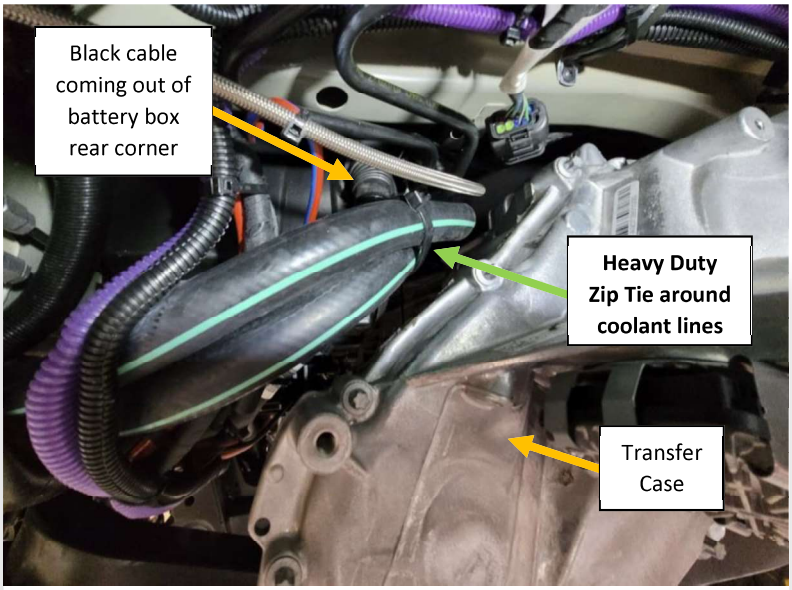


Figure 7

Coolant Line Securing Checklist

Rev07212023

Instructions: Complete this checklist during the procedure outlined in the document "TSB-STO2023-003: Coolant Line Securing Around Transfer Case." Once the checklist and instructions have been completed, supply completed form and necessary photos to Storyteller Overland via email at warranty@storytelleroverland.com

Service Center Name: _____ **Date:** _____

Name/Employee # of person(s) performing procedure: _____

Van Owner's Name: _____ **Van's VIN:**_____

NOTE: If you answer yes to any of these questions, take photos to provide to Storyteller Overland

Step 2c: Are the coolant lines touching or able to touch the transfer case? **Yes**____ **No**____

Are there signs of chafing, wear or damage to the coolant lines in this area? **Yes**____ **No**____

Description of chafing, damage or wear found: _____

_____

_____

Step 2d: Are there any zip ties missing in the locations detailed in this step? **Yes**____ **No**____

Step 2e: Are there signs of chafing, wear or damage to the coolant lines in this area? **Yes**____ **No**____

Description of chafing, damage or wear found: _____

_____

_____

Select <u>one</u> of the options below and initial on the line next to it:

☐ No issues or concerns found with the coolant lines. I am going to continue Exploring Endlessly! _____

☐ Coolant lines were not damaged but needed to be secured per these instructions _____

☐ Coolant lines have damage and I need further instructions. _____

TSB-STO2023-004: Coolant Line Replacement-2

Rev07212023

Overview:

This document steps you through how to replace the coolant lines in the area of concern and contains a checklist to complete and return back to warranty@storytelleroverland.com. Please contact Storyteller should you have any questions or need any assistance with these instructions.

Safety Alert:

Do not perform these steps unless you feel comfortable doing so. The following steps will be performed under the van where components are likely to be hot. Only perform these steps once the van has had adequate time to cool down. Exercise extreme caution when attempting to perform these steps. Reach out to Storyteller Overland should you have any questions or concerns.

Repair Time: 1 Hour

Applicable Vehicles:

All STO Mercedes Sprinter AWD MODEs

Tools and Parts Needed:

- Tools:
  - 5/16" wrench
  - Drain pan
  - Towels/Paper towels
  - Scissors/Utility Knife
  - Flush cutters
  - Marker
  - Funnel
- Parts*:
  - (2) 7 ft Coolant Hoses
  - (10) Standard Zip ties
  - (2) Zip Tie Push Mounts
  - (2) Heavy Duty High-temp Zip Ties
  - 2 gallons Chassis Coolant

* Parts required for repair will be provided to you by STO once photo proof of issue/damage has been provided to STO.

Repair Procedure:

1. Park the van in a safe area with adequate room to access underneath the van. Allow the van to cool down to a safe working temperature. **NOTE: Repair will be performed under the van where components are likely to be hot after driving. Only proceed to the next step once the van has had adequate time to cool down. Exercise extreme caution when attempting to perform these steps.**
2. Inspect and take note of coolant line routing from under the van to the engine bay. This will help you understand how to route the replacement hoses as detailed in these instructions.
    a. Locate the Rixen heat exchanger that is mounted under the van to the chassis frame just behind the driver side front tire as shown in figure 1.
    b. Follow the (2) coolant lines from the right side of the heat exchanger toward the center of the chassis and between the transmission and battery box. See figure 1



Figure 1

Locate Rixen heat exchanger under the van circled in the figure. Follow the (2) coolant lines between the transmission and battery box as pointed out with an arrow.

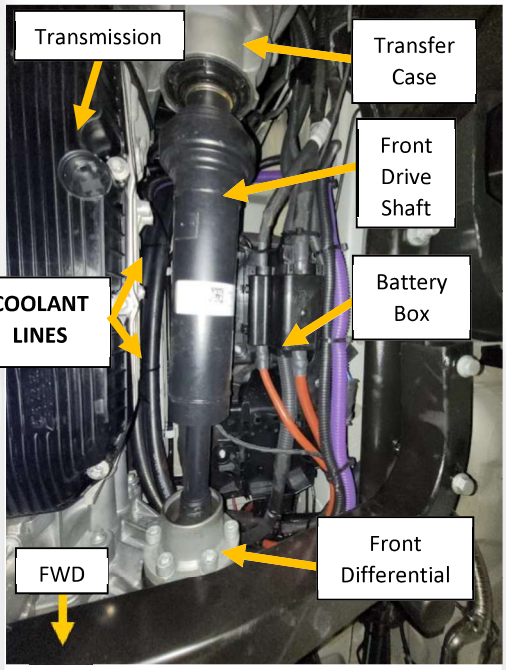
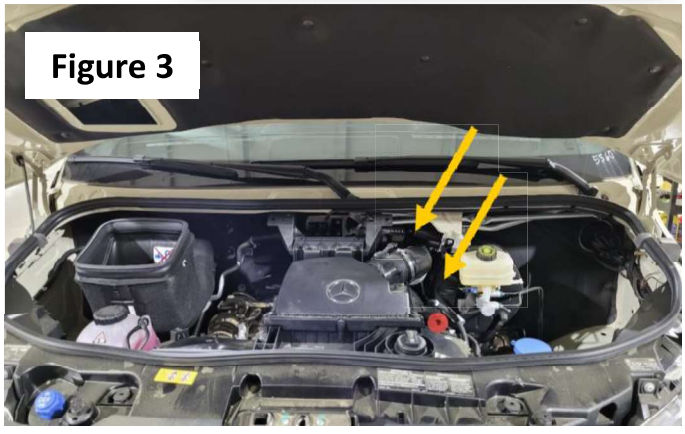


Figure 2

    c. Continue to follow the coolant lines in the area between the battery box and the transmission from the transfer case to the front differential and above the front drive shaft. See figure 2

    d. From the front differential, the hoses route up into the engine bay.

    e. When looking at the engine bay, you should see the 2 hoses coming up along the firewall behind the air box as pointed out by the 2 arrows in figure 3.



3. Disassembly of hoses
    a. Place a drain pan underneath the heat exchanger under the van (location detailed in step 2a). See figure 4
    b. Use a 5/16" wrench to loosen the lower right hose clamp on the heat exchanger. See figure 5. **NOTE:** As this is loosened, coolant will likely begin to drip out, make sure drain pan is positioned properly to contain the coolant.
    c. Once the hose clamp is loosened, pull off the hose from the barbed fitting and allow the coolant to drain into the drain pan. Set hose clamp aside for reuse later.
    d. Next, use the 5/16" wrench to loosen the upper right hose clamp on the heat exchanger. See figure 5. **NOTE:** As this is loosened, coolant will likely begin to drip out, make sure drain pan is positioned properly to contain the coolant.
    e. Once the hose clamp is loosened, pull off the hose from the barbed fitting and allow the coolant to drain into the drain pan. Set hose clamp aside for reuse later.
    f. After the coolant has drained out of the hoses, use a pair of cutters to snip any zip ties that are secured around the 2 coolant hoses being removed. See figure 6 for example.

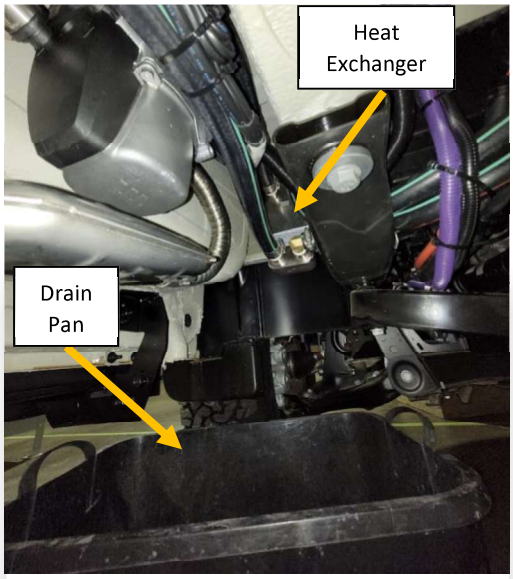


Figure 4

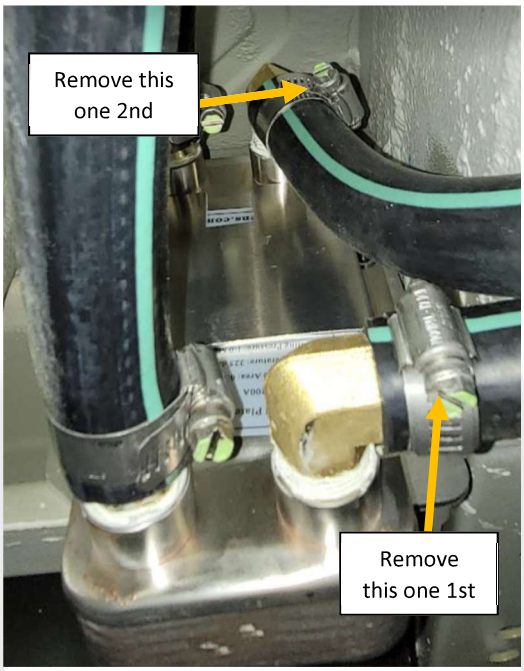


Figure 5



Figure 6

g. In the engine bay, place towels under the heater hoses behind the air box coming through the firewall as shown in figure 7. This is where the 2 coolant hoses being replaced are connected in the engine bay as also shown in figure 7.

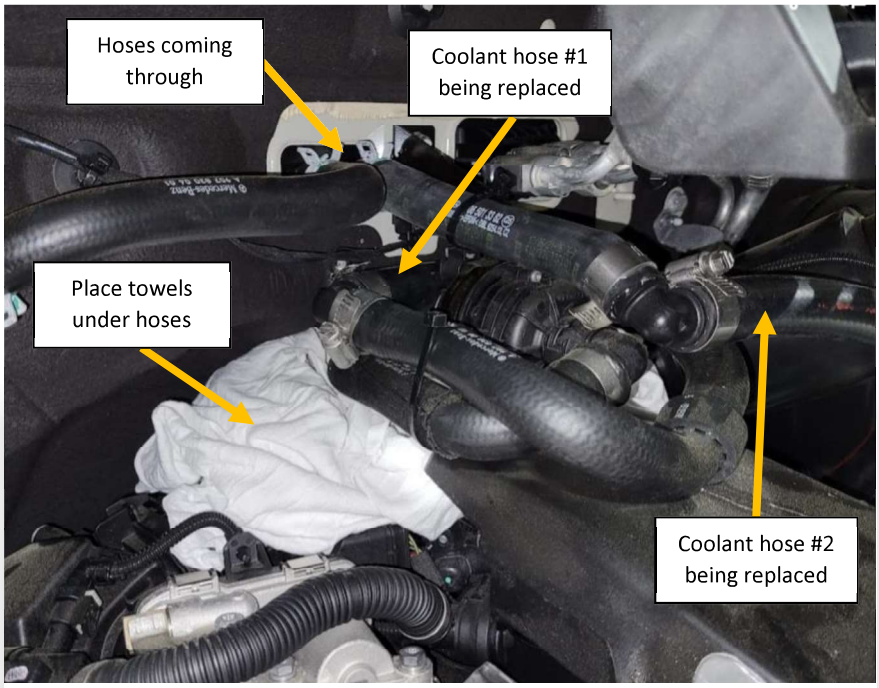


Figure 7

h. Use a 5/16" wrench to loosen the hose clamps around the coolant hoses being replaced. One is connected to the 90 degree fitting behind the pump and the other is connected to the 90 degree fitting above/in front of the pump as shown in figure 8. Once the hose clamps are loosened, pull off the hoses from the fittings. Set both hose clamps aside for reuse later.

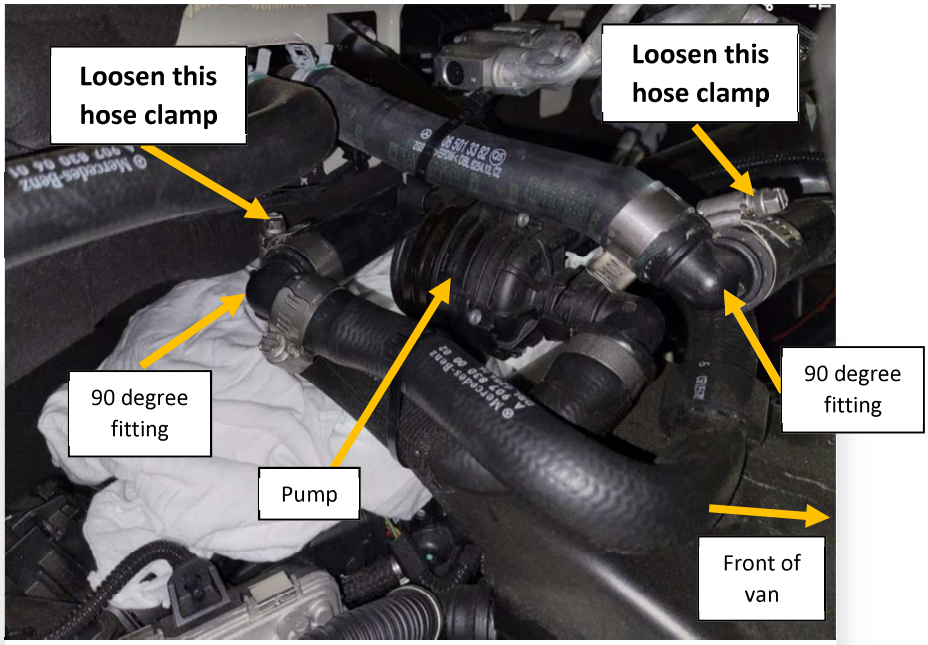


Figure 8

i. Use a pair of cutters to snip any remaining zip ties that are secured around the 2 coolant hoses being removed.

j. From underneath the van, pull the 2 coolant lines out from the van and dispose of them.

4. Install replacement hoses

a. Mark one of the hoses with a marker at each end in order to help differentiate between the 2 hoses during the next steps.

b. In the engine bay, start feeding the unmarked hose down the firewall and over the pipe coming out of the air box. Only feed the hose about 2 feet down. See figure 9.

c. Feed the marked hose under the black hose coming out of the brake booster, above the ECM, then down the firewall about 2 feet down. See figure 10

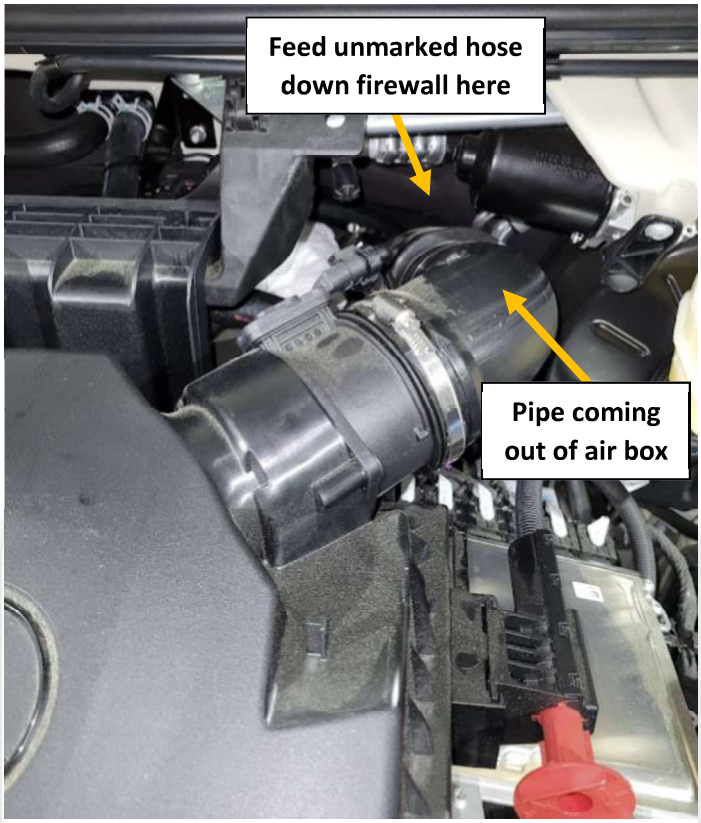


Figure 9

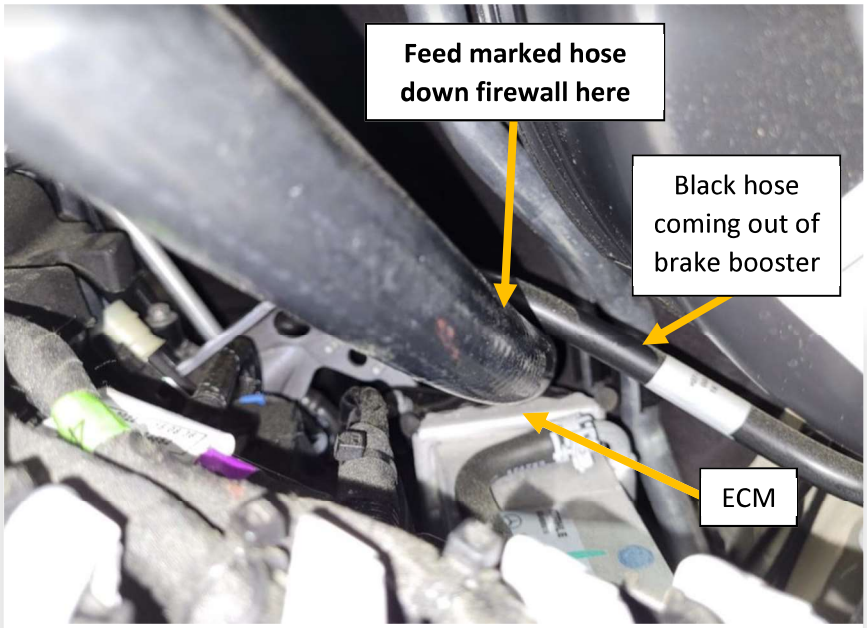


Figure 10

d. From underneath the van, locate the hoses coming down the firewall and begin pulling through and guiding the hoses toward the rear of the van in the space between the transmission and the battery box, and above the front drive shaft as shown in figure 11.

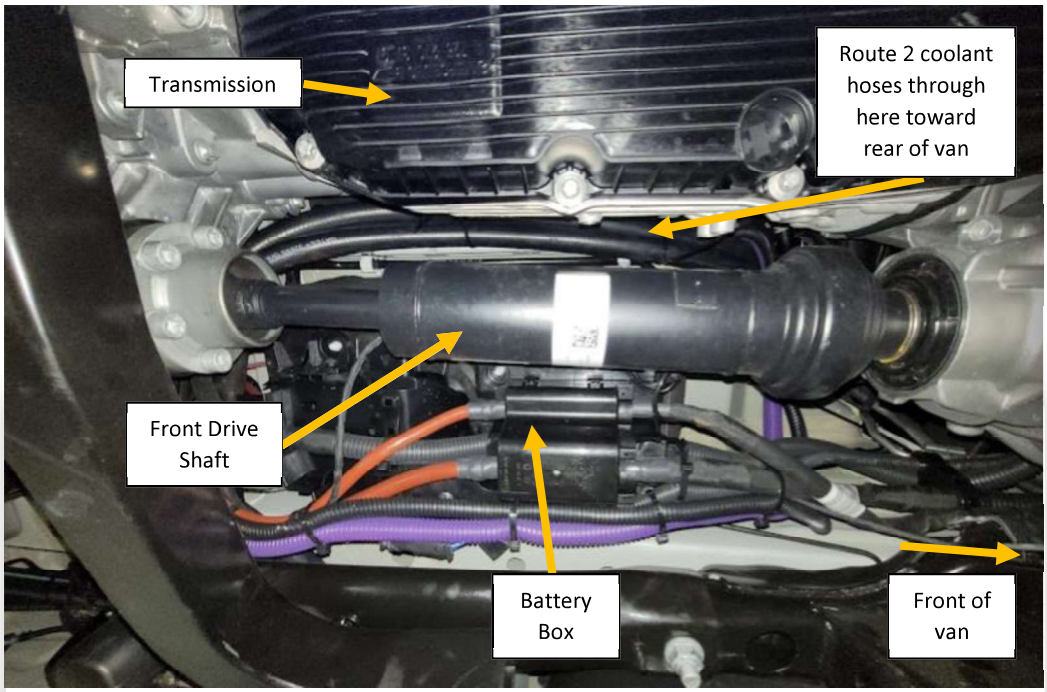


Figure 11

e. At the rear of the battery box, route the 2 coolant hoses around the battery box corner toward the driver's side of the van and feed through the subframe toward the heat exchanger. See figure 12.

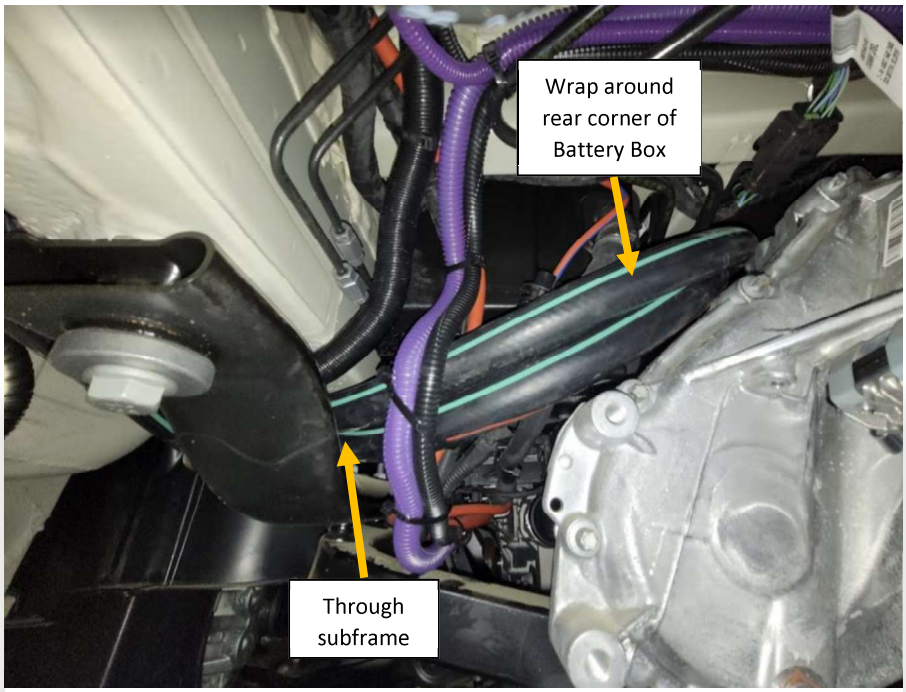


Figure 12

f. Slide one of the hose clamps onto the end of the unmarked hose. Then, push the hose onto the upper right corner fitting on the heat exchanger until the hose fully covers the barbed section of the fitting. Slide the hose clamp to about 1/8” from the end of the hose, then tighten the hose clamp around the hose and fitting. See figure 13.

g. Slide one of the hose clamps onto the end of the marked hose. Then, push the hose onto the lower right corner fitting on the heat exchanger until the hose fully covers the barbed section of the fitting. Slide the hose clamp to about 1/8” from the end of the hose, then tighten the hose clamp around the hose and fitting. See figure 13.

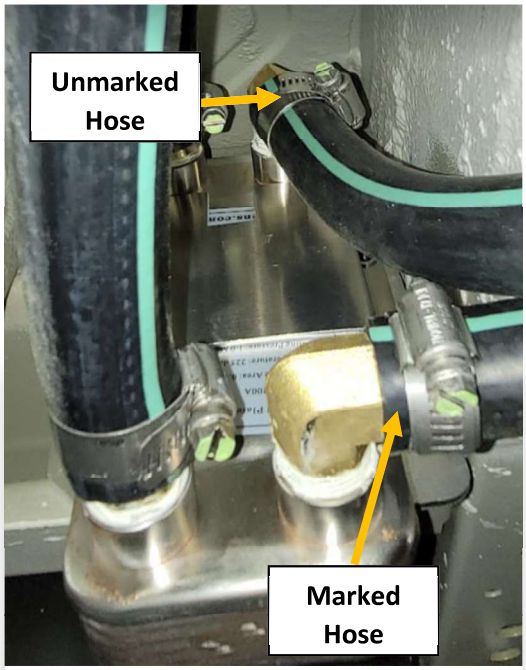


Figure 13

h. Back in the engine bay, slide a hose clamp on the end of the unmarked hose. Then, install this unmarked hose to the 90 degree fitting behind the pump as shown in figure 14. Use scissors/knife to cut the hose to length as needed. Be sure the hose is pressed all the way onto the fitting. Then tighten the hose clamp around the hose and fitting about 1/8” from the end of the hose.

i. Slide the last hose clamp on the end of the marked hose. Route the marked hose through the U shaped cradle mounted at the back of the engine above the ECM, see figure 14a. Then, install this marked hose to the 90 degree fitting above/in front of the pump as shown in figure 14. Use scissors/knife to cut the hose to length as needed. Be sure the hose is pressed all the way onto the fitting. Then tighten the hose clamp around the hose and fitting about 1/8” from the end of the hose.

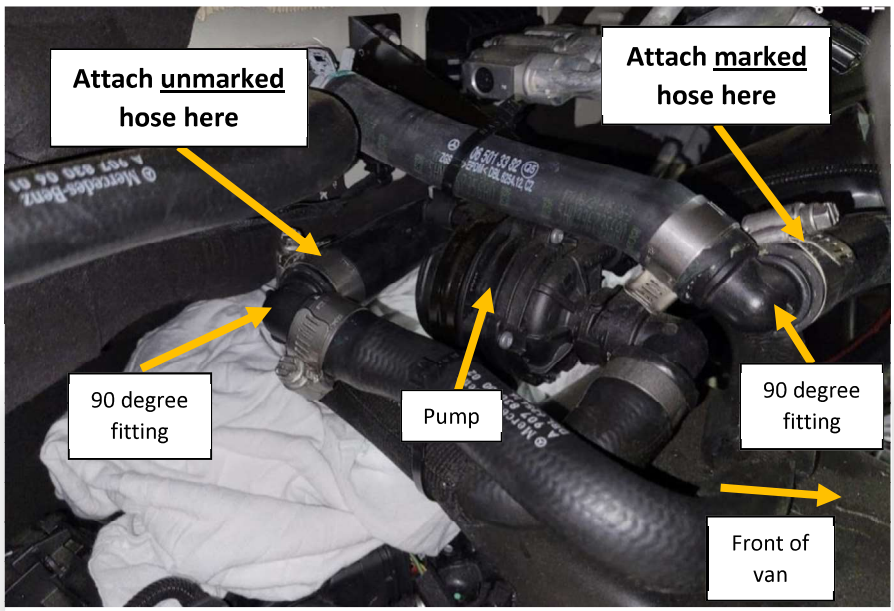


Figure 14

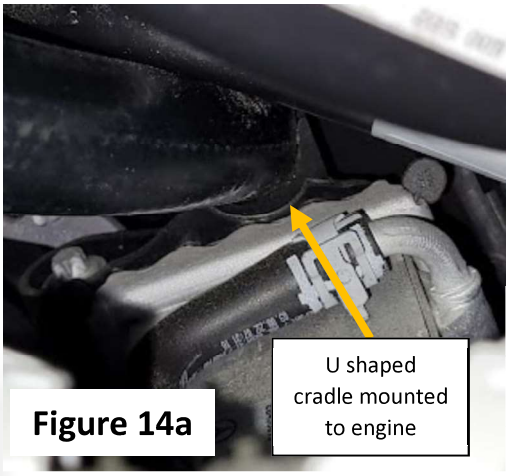


Figure 14a

5. Secure the replacement hoses with zip ties
    a. Thread (1) of the zip tie push mounts onto a standard zip tie so the head of the zip tie faces the same direction as the push mount. See figure 15. The repeat this with the 2nd zip tie push mount



Figure 15

    b. Install a push mount (once threaded onto the zip tie) into each of the (2) holes in the chassis frame on the underside of the floor located between the transmission and battery box as pointed out in figure 16. Make sure the push mounts are pressed fully into each hole to provide a secure hold.
    c. Position the coolant lines up against the frame so they are prevented from making contact with the front drive shaft. Wrap each zip tie around both coolant hoses and secure the zip ties so they are snug against the coolant lines but will not restrict coolant flow. See figure 17
    d. Cut off the excess ends of the zip ties using a pair of cutters and ensure the coolant lines do not and are not able to make contact with the front drive shaft or any moving component.



Figure 16

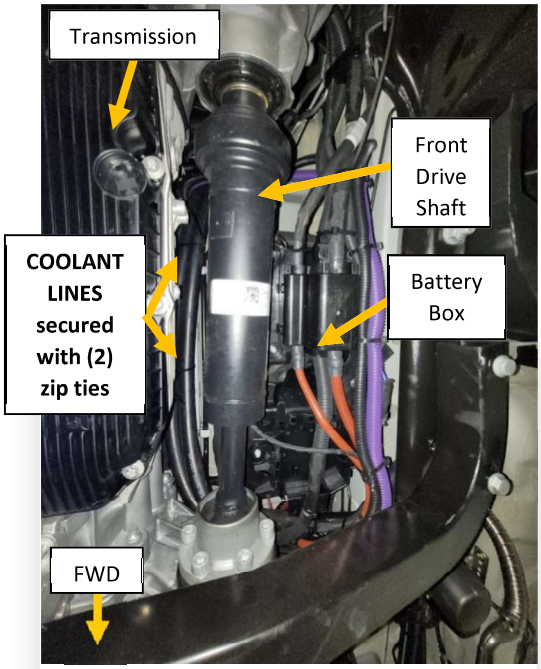


Figure 17

e. Secure 1 heavy duty zip tie around the coolant lines and the hole in the chassis frame member just in front of the white chassis hose mount that is located between the battery box and the transfer case and above the front driveshaft on the underside of the van body floor. NOTE: Be sure to not bundle the fuel lines that are routed through the white mount with this zip tie. It is easiest to feed the zip tie between the fuel lines and the frame member first, then through the hole in the frame member and then around the coolant lines to secure. See figure 18

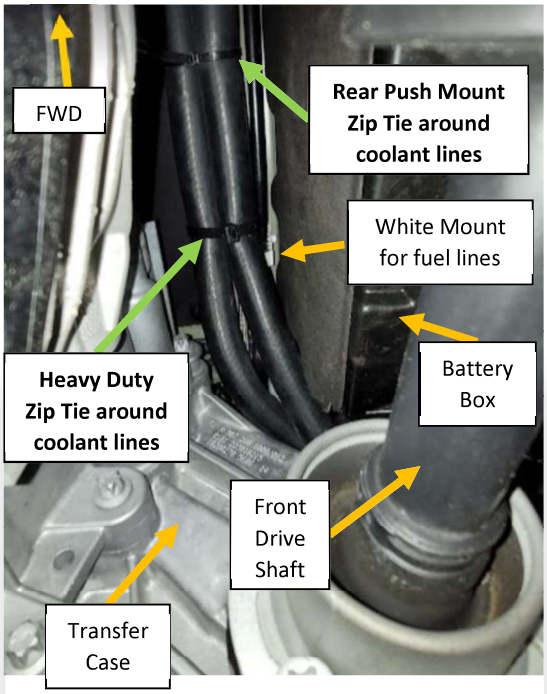


Figure 18

f. Cut off the excess end of the zip tie using a pair of cutters and ensure the coolant lines do not and are not able to make contact with the front drive shaft or transfer case in this area.

g. Add the 2nd heavy duty zip tie around the coolant lines and the negative (black) battery cable that comes out the rear inboard corner of the battery box. Position the zip tie toward the top of the battery cable so it pulls the coolant lines away from the transfer case considerably as shown in figure 19.

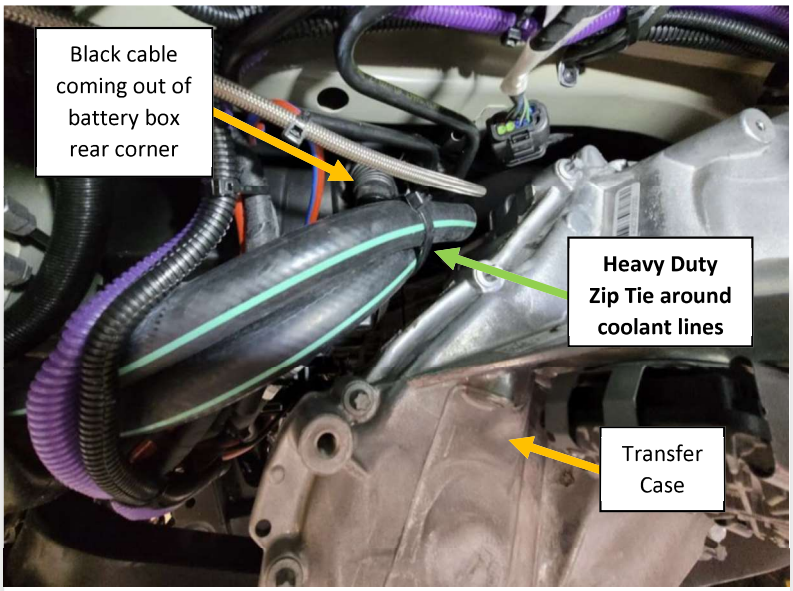


Figure 19

h. Use the remaining zip ties to secure the replaced coolant lines in the areas originally secured such as at the rear of the battery box and to the pipe coming out of the air box. Use cutters to cut the excess ends of the zip ties.

6. Test repairs
    a. Double check all connections made to ensure the hoses are connected in the proper orientation and that the hose clamps are tight. Also verify the replaced coolant hoses are not able to contact the front drive shaft, transfer case, transmission, or any moving component.
    b. Since the engine coolant loop was serviced, it is necessary to refill the coolant system per Mercedes Benz recommended procedure which makes use of a coolant system vacuum filler.
    c. Once the coolant has been refilled, turn on the van while keeping a close watch on the coolant level in the reservoir. Allow the engine to get up to operating temperature. **NOTE: Do NOT allow the coolant reservoir to run out of coolant. Also check for any signs of leaks around the connections made in this procedure. Address any leaks as needed.**
    d. Take the van on a test drive then recheck the coolant level in the reservoir and check for any leaks around the connections made in this procedure.
7. Complete the Coolant Line Replacement Checklist at the end of these instructions and return a copy to warranty@storytelleroverland.com
8. Reach out to STO should you have any questions or need additional assistance.

Coolant Line Replacement Checklist

Rev07212023

Instructions: Complete this checklist during the procedure outlined in the document "TSB-STO2023-004: Coolant Line Replacement-2" by initialing next to each item in the spaces provided. Once the checklist and instructions have been completed, supply completed form to Storyteller Overland via email at warranty@storytelleroverland.com

Service Center Name: _____ **Date:** _____

Name/Employee # of person(s) performing procedure: _____

Van Owner's Name: _____ **Van's VIN:**_____

Step 4: Hoses are routed and connected in the correct orientation as detailed _____

Step 4f-4i: All 4 hose clamps are securely tightened around their respective hoses and fittings _____

Step 5a-5d: Coolant lines are secured with (2) push mounts and standard zip ties _____
Coolant lines are **NOT** able to touch front drive shaft or any moving components _____

Step 5e-5f: Heavy duty zip tie secured around the coolant lines and the van frame member _____
Coolant lines are not able to touch the transmission/transfer case _____
Fuel lines are **NOT** bundled in the zip tie _____

Step 5g: Heavy duty zip tie secured around coolant lines and black battery cable _____
Coolant lines are **NOT** able to make contact with the transfer case _____

Step 5h: Coolant lines are secured with remaining zip ties as needed to prevent damage _____

Step 6: Coolant vacuum filler used _____
No leaks found _____
Coolant line repair is completed per these instructions and ready to take on adventures _____