REFERENCE:	Nova Bus Manuals
SECTION:	14: H/V A/C
RS Nº:	MQR 7621-2390

APPLICATION DEADLINE: 2023JA01
CLAIM REFERENCE NUMBER: WB-5209

SUBJECT:	Rotron coolant pump
JUSTIFICATION:	Burr on the flange might result in a coolant leakage. Nord-Lock washers may be missing.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Inspection for leakage and Nord-lock washers	Nova Bus	–	20 min
2	Replace gaskets, install new sets of Nord-lock washers	Nova Bus	Client*	1h
	Deburr and retap threads			30 min

* The cost of the material will be reimbursed when claiming for this service document.

MATERIAL REQUIRED PER VEHICLE

QTY	PART Nº	REV.	DESCRIPTION
LEVEL 1			
2	2389154	C	GASKET WATER PUMP
4	N55583	A	WASHER NORD-LOCK SET M10 SS A4
LEVEL 2 (only if required)**			
–	–	–	–

Materials will be available within 129 days once your order has been placed.
To order, please contact novabus.parts@volvo.com
Or by phone for CANADA 1-800-771-6682, for USA 1-877-999-8808
Specify document number, quantity of parts required and shipping address.

**The material identified in Level 2 is to be ordered only for vehicles that meet the criteria defined in Level 1.

DISPOSAL OF PARTS

REMOVED PARTS ARE:	DISCARDED *	RETAINED	* Dispose of the unused parts and the defective parts in accordance with local environmental standards in effect.
	Yes	–	

REVISION HISTORY

REV.	DATE	CHANGE DESCRIPTION	WRITTEN BY
NR	2021NO15	Initial release	André Pelletier
NR	2022JA27	Procedure modified in 1.22 and 2.9	André Pelletier

APPROVED BY:

Jean-Nicolas Fournier

Digitally signed by Jean-Nicolas Fournier
DN: cn=Jean-Nicolas Fournier, o=Nova Bus, email=jean-nicolas.fournier@volvo.com, c=CA
Date: 2022.01.27 10:17:42 -05'00'

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
New York City Transit New York - NYCT	LC79	9624	9624	L82L3M9777783	L82L3M9777783	1
New York City Transit New York - NYCT	LC79	9625	9625	L82L5M9777784	L82L5M9777784	1
New York City Transit New York - NYCT	LC79	9626	9626	L82L7M9777785	L82L7M9777785	1
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New York City Transit New York - NYCT	LC79	9636	9636	L82LXM9777795	L82LXM9777795	1
New York City Transit New York - NYCT	LC79	9637	9637	L82L1M9777796	L82L1M9777796	1
New York City Transit New York - NYCT	LC79	9639	9639	L82L5M9777798	L82L5M9777798	1
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New York City Transit New York - NYCT	LC79	9700	9700	L82LXM9777859	L82LXM9777859	1
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CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
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New York City Transit New York - NYCT	LC79	9760	9760	L82L5M9777929	L82L5M9777929	1
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CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
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New York City Transit New York - NYCT	LC79	9765	9765	L82L0M9777935	L82L0M9777935	1
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New York City Transit New York - NYCT	LC79	9767	9767	L82L4M9777937	L82L4M9777937	1
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New York City Transit New York - NYCT	LC79	9769	9769	L82L8M9777939	L82L8M9777939	1
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New York City Transit New York - NYCT	LC79	9779	9779	L82L0M9777949	L82L0M9777949	1
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New York City Transit New York - NYCT	LC79	9783	9783	L82L2M9777953	L82L2M9777953	1
New York City Transit New York - NYCT	LC79	9784	9784	L82L4M9777954	L82L4M9777954	1
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New York City Transit New York - NYCT	LD64	9803	9803	L82L7M9777978	L82L7M9777978	1
New York City Transit New York - NYCT	LD64	9806	9806	L82L7M9777981	L82L7M9777981	1
New York City Transit New York - NYCT	LD64	9810	9810	L82LXM9777991	L82LXM9777991	1
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New York City Transit New York - NYCT	LD64	9831	9831	L82L8M9778024	L82L8M9778024	1
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New York City Transit New York - NYCT	LD64	9841	9841	L82L6M9778040	L82L6M9778040	1
New York City Transit New York - NYCT	LD64	9844	9844	L82L1M9778043	L82L1M9778043	1

WARNING

FOLLOW YOUR INTERNAL SAFETY PROCEDURES.

PROCEDURE

1.1. Park the vehicle on an even surface with the transmission on neutral.

1.2. Apply the parking brake and set the master control switch to the ***stop*** position.

1.3. Set the battery disconnect switch in the battery compartment to the ***off*** position.

LEVEL 1 INSPECTION

CAUTION

For information on hoisting and towing of the vehicle, see section *18: HOISTING AND TOWING* **in the Nova Bus maintenance manual. Use appropriate hoisting equipment for your protection and to prevent damage to the vehicle.**

1.4. Raise the vehicle.

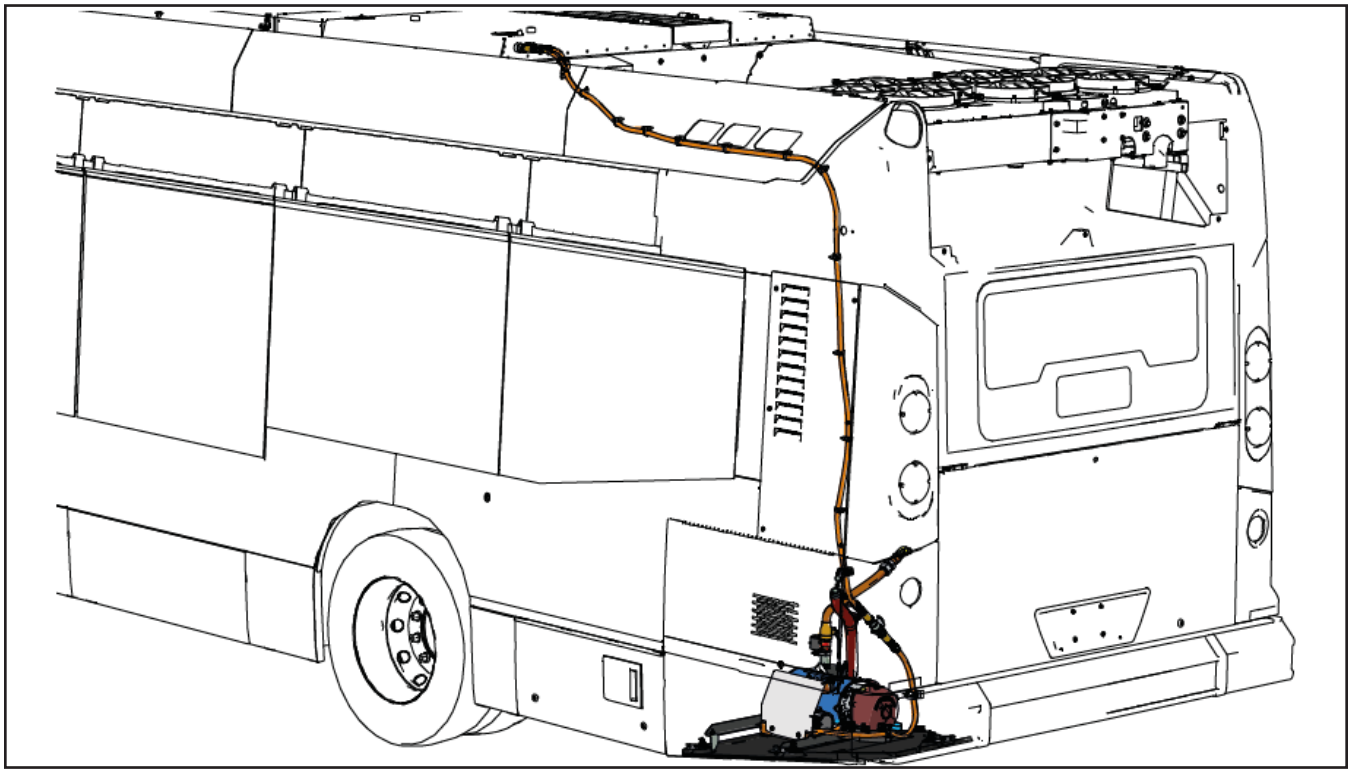


Figure 1 - Auxiliary Heater and Rotron Recirculating Pump Location

1.5. Remove the dust pan.

1.6. Inspect the flange gasket area for any sign of leakage. If signs of leakage, go to page 13 step 2.1 "**Procedure to repair a leakage**".

1.7. If there is no signs of leakage, proceed with a coolant pressure leak test (if not already done under the FT5191):

COOLANT PRESSURE LEAK TEST

Figure 2 - Engine Control Box

1.8. Place the **engine control switch**, located on the engine control box, in the **rear** run position.

ENGINE COOLANT MESSAGE TABLE		
REAR START MODE (REAR TACHOMETER)		
CONDITION	**MESSAGE**	**BACK LIGHT**
FULL COOLANT	FULL COLD LEVEL	STEADY ON
LEVEL BETWEEN FULL AND LOW LEVEL 1 (NORMAL RANGE)	NO MESSAGE	STEADY ON
LEVEL BETWEEN LOW LEVEL 1 AND LOW LEVEL 2	LOW COOLANT LEVEL	FLASHING
LEVEL BELOW LOW LEVEL 2	LOW COOLANT LEVEL	FLASHING
SENSOR PROBLEM	CHECK COOLANT SNS	STEADY ON

Figure 3 - Engine Coolant Message Table

1.9. Validate the engine cooling system level using the ACTIA display on the engine control box tachometer. See the figure below for the message table.

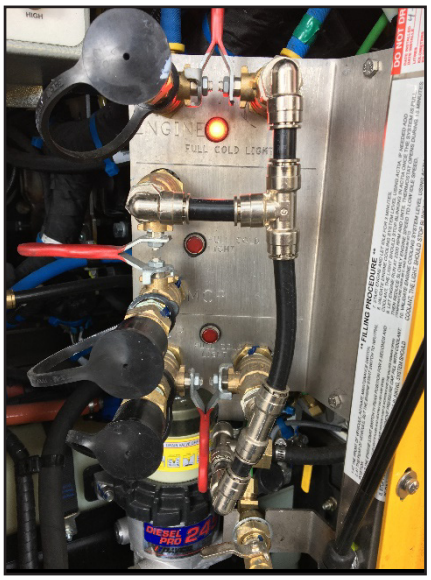


Figure 4 - Fill Port Console

NOTE

If required, the engine cooling system filling procedure is in the Annex A at the end of this service bulletin.

1.10. The lights on the fill port console are also showing the full or low coolant level: If coolant level is on or under the low level, the light illuminates. If coolant level is on full level, the light extinguishes.

1.11. To open the coolant valve, use the VBEA maintenance test program by following the next steps.

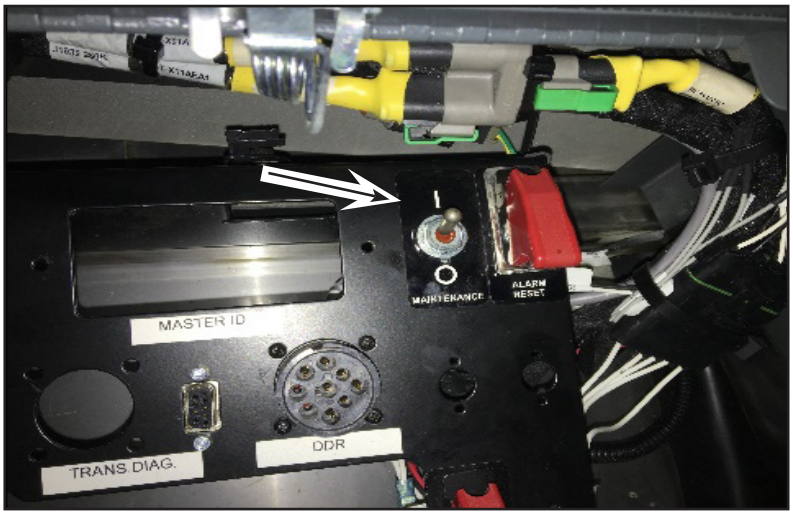


Figure 5 - Overhead Console (Aka Driver's Top)

1.12. Above the driver's seat, open the overhead console and locate the maintenance switch and set it to the (I) Maintenance mode.

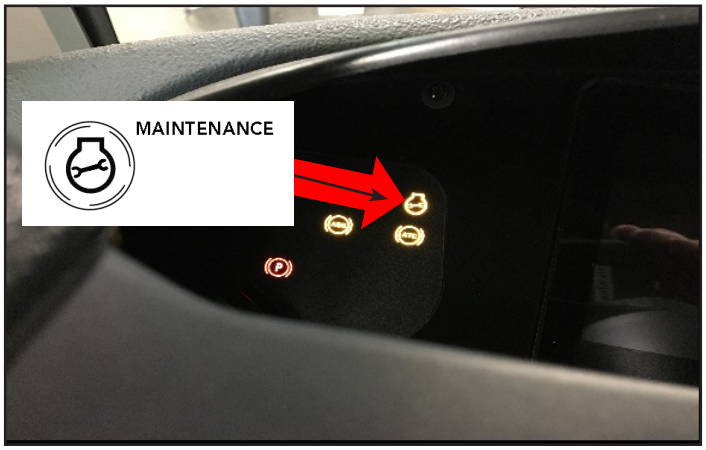


Figure 6 - Underside of Auxiliary Heater and Cradle

1.13. To verify if the bus is in Maintenance Mode, check on the dash and look for the wrench symbol.

Figure 7 - Heater in Fully Open Position

1.14. Place the heater defroster control valve in the fully open heating position.

1.15. Ensure that all the fill valves are in the closed position. See figure 4.

1.16. Place the **engine control switch**, located on the engine control box, in the **center** position. See figure 2.

1.17. Press **down** the engine start switch on the rear engine control box for 5 seconds and release. Press **down** again on engine start switch for 1 second and release.

Figure 8 - Engine Start Switch

1.18. Check the backup lights and center stop light are blinking (every 4 seconds) to confirm that the sequence has been activated, meaning the defroster heating valve and the floor heater valves are fully open.

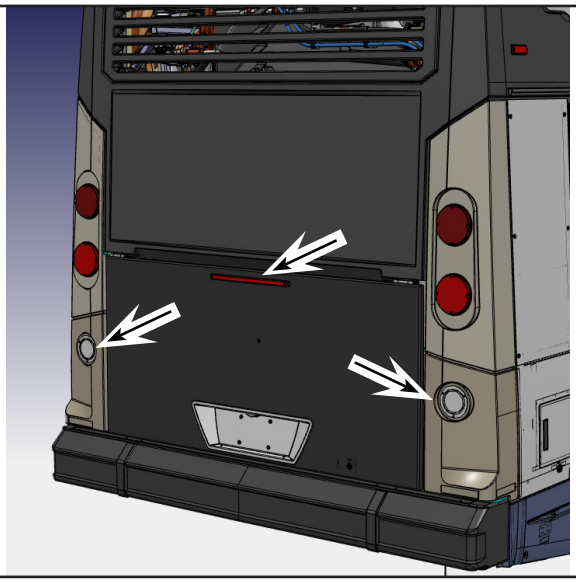


Figure 9 - Check the Backup Lights and Center Stop Light Are Blinking

CAUTION

Wait until the temperature is below 120°F (50°C) before removing the pressure cap. Failure to do so can cause personal injury from heated coolant spray.

1.19. On the roof, remove the engine surge tank cap and install a pressure tester.

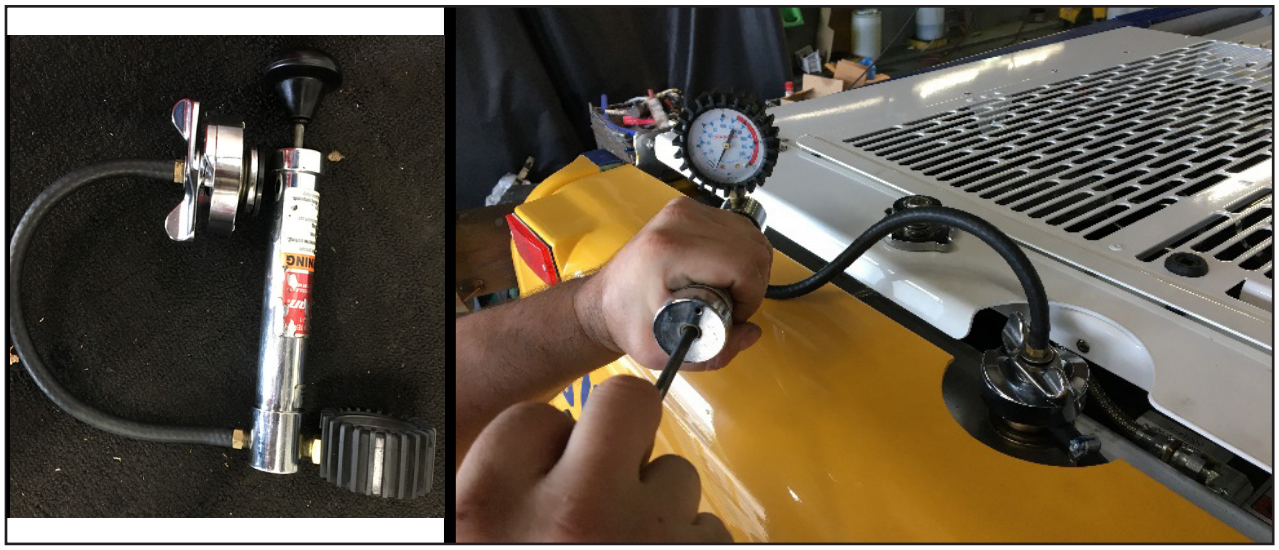


Figure 10 - Install a Pressure Tester

1.20. Pump the pressure up to 20 to 21 psi and check to see if pressure holds.

Figure 11 - Pump the Pressure Up to 20 to 21 PSI

NOTE

A decrease in gauge pressure indicates a leak in the engine cooling system. If there is no pressure drop indicated on the gauge, the engine cooling system is good and air may have been trapped in the system.

1.21. If the gauge shows a decrease in pressure, there is a possible leak in the system. Look for coolant leaking from the fittings and hoses in the Rotron pump area, beside the auxiliary heater.

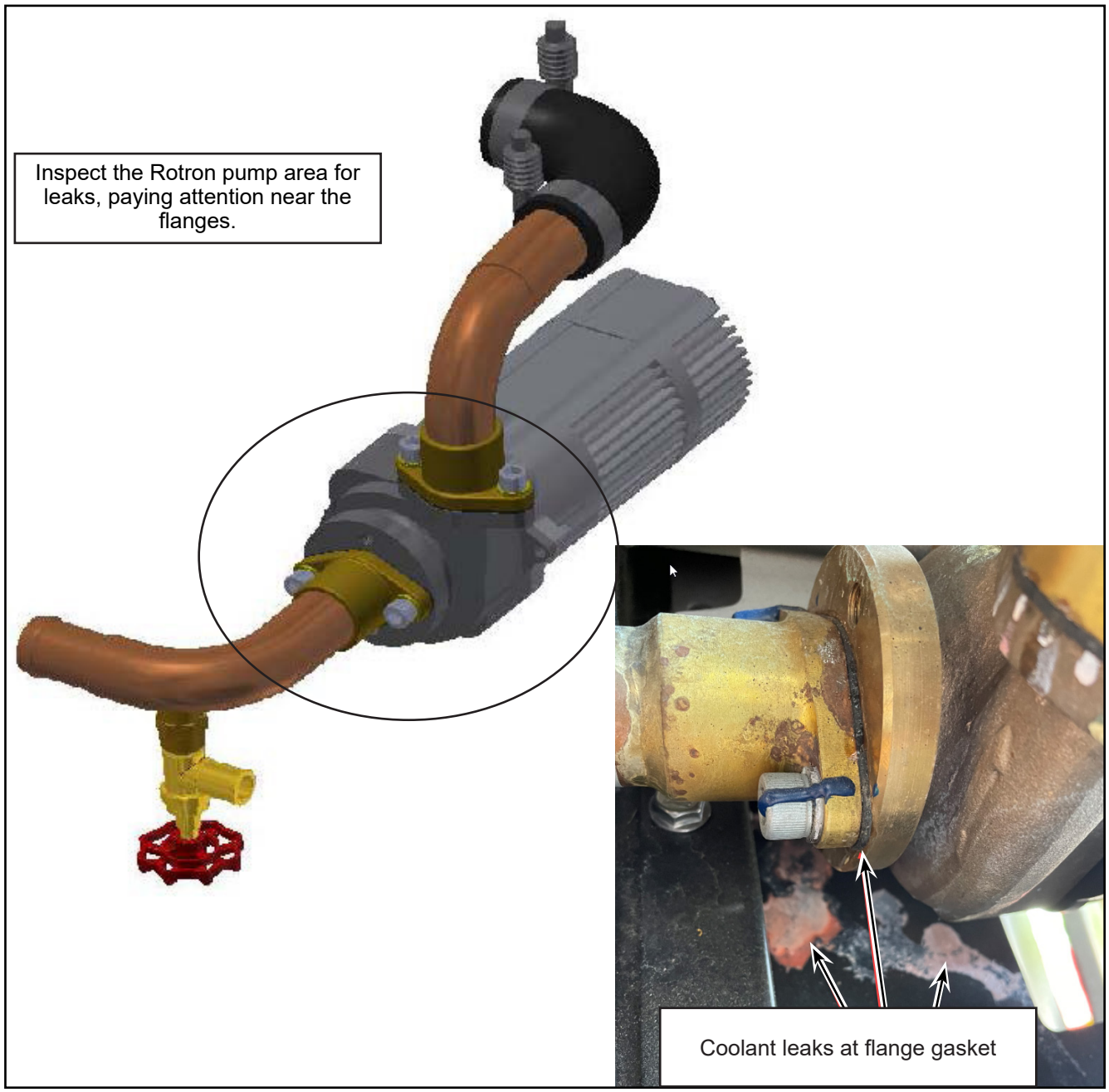


Figure 12 - Inspect for Leaks

NOTE

If there is no leakage, perform the procedure below "Inspection for the washers".

If there is a leakage, follow the "Procedure to repair a leakage" on the next page.

INSPECTION FOR THE WASHERS

1.22. After performing the steps 1.1 to 1.21, if no leakage were found, you still have to verify if all the Nord-Lock washers (one set of washers under each of the four bolts head) are in place for the Rotron pump flanges. See the figure below.

1.23. If all the washers are there, this service bulletin is finished and the vehicle may return in service.

1.24. If one or more washers are missing, you need to do the "Procedure to repair a leakage" on the next page (drain the system, replace the gasket, inspect the threads, install new washers).

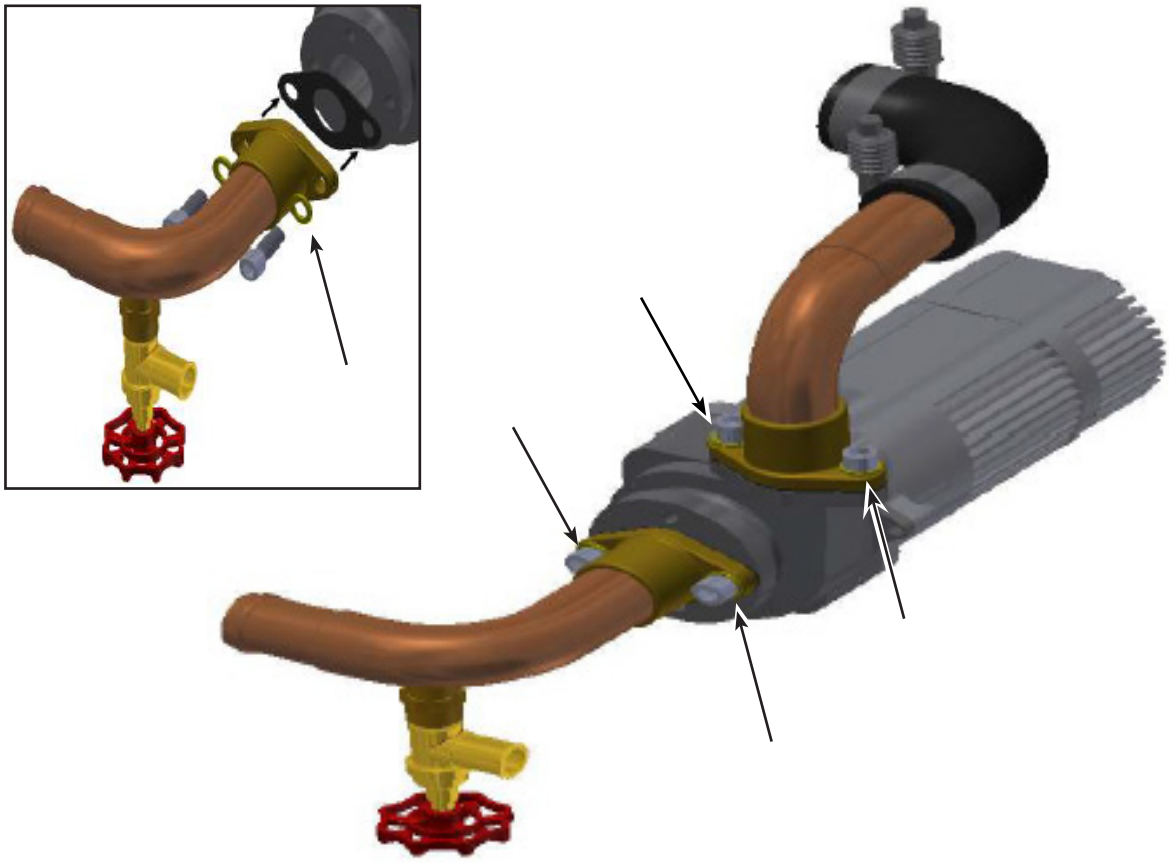


Figure 13 - Verify if the Washers are Installed (Typical, 4 places)

PROCEDURE TO REPAIR A LEAKAGE

2.1. Drain the system, see the procedure in your manual section 14: HEATING AND VENTILATION.

CAUTION

Before removing the nuts and bolts, take the necessary precautions to prevent the support from swinging downward suddenly and freely.

2.2. To pivot down the cradle of the auxiliary heater and the Rotron pump, loosen the four nuts that attach the support frame to the structure. See the next figure.

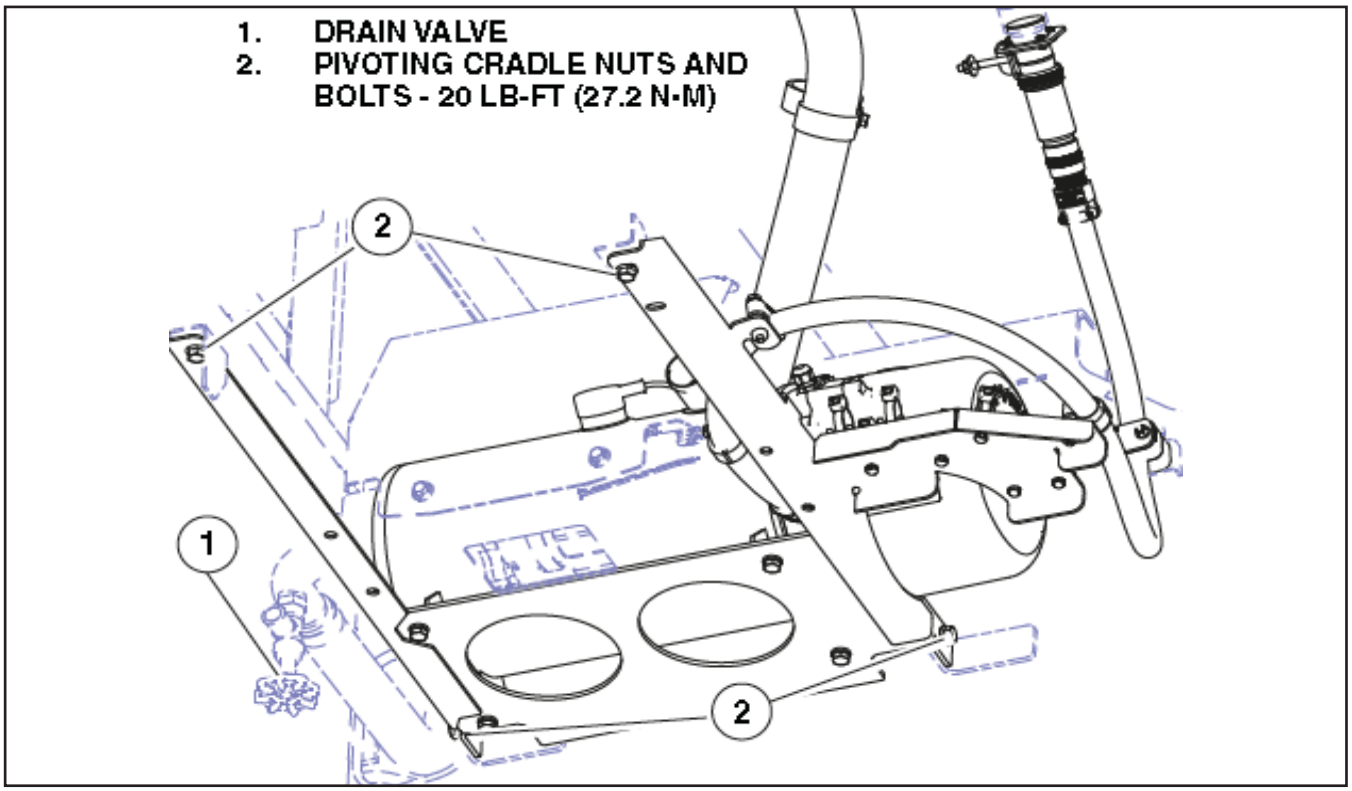


Figure 14 - Underside of Auxiliary Heater and Cradle

NOTE

It is not necessary to disconnect the hoses or wiring. However, if the wiring does interfere with the movement of the support, then disconnect it before pivoting the cradle.

CAUTION

Before removing the nuts and bolts, take the necessary precautions to prevent the support from swinging downward suddenly and freely. Make sure that no surrounding hoses are pinched or damaged when pivoting the auxiliary heater.

2.3. Remove the two nuts and bolts from the cradle, on its street side and pivot the cradle downward. See the next figures.

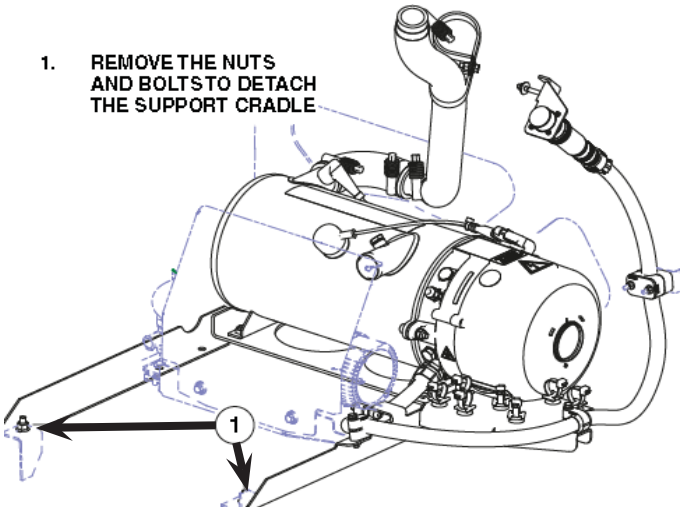


Figure 15 - Remove the Nuts and Bolts

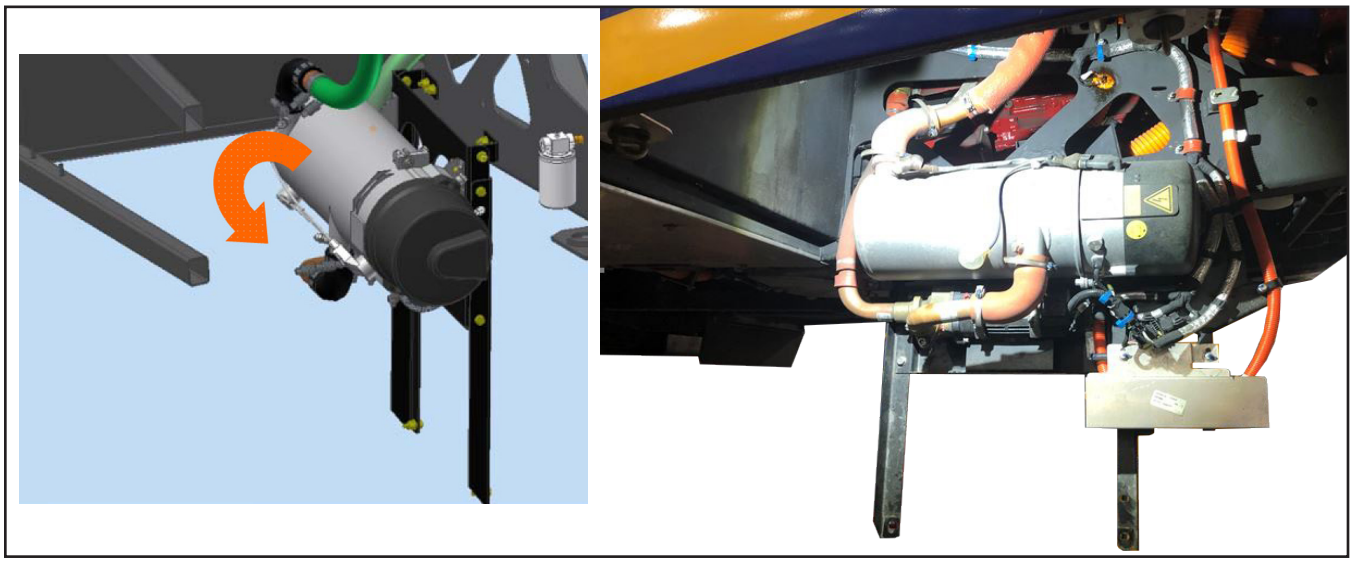


Figure 16 - Pivot the Auxiliary Heater Support

2.4. To be able to inspect the threads, disconnect the two pipes going to the pump flanges. Keep the bolts, discard the Nord-Lock washers and the flange gaskets. Note the positon of the bolts: they do NOT have all the same leght.

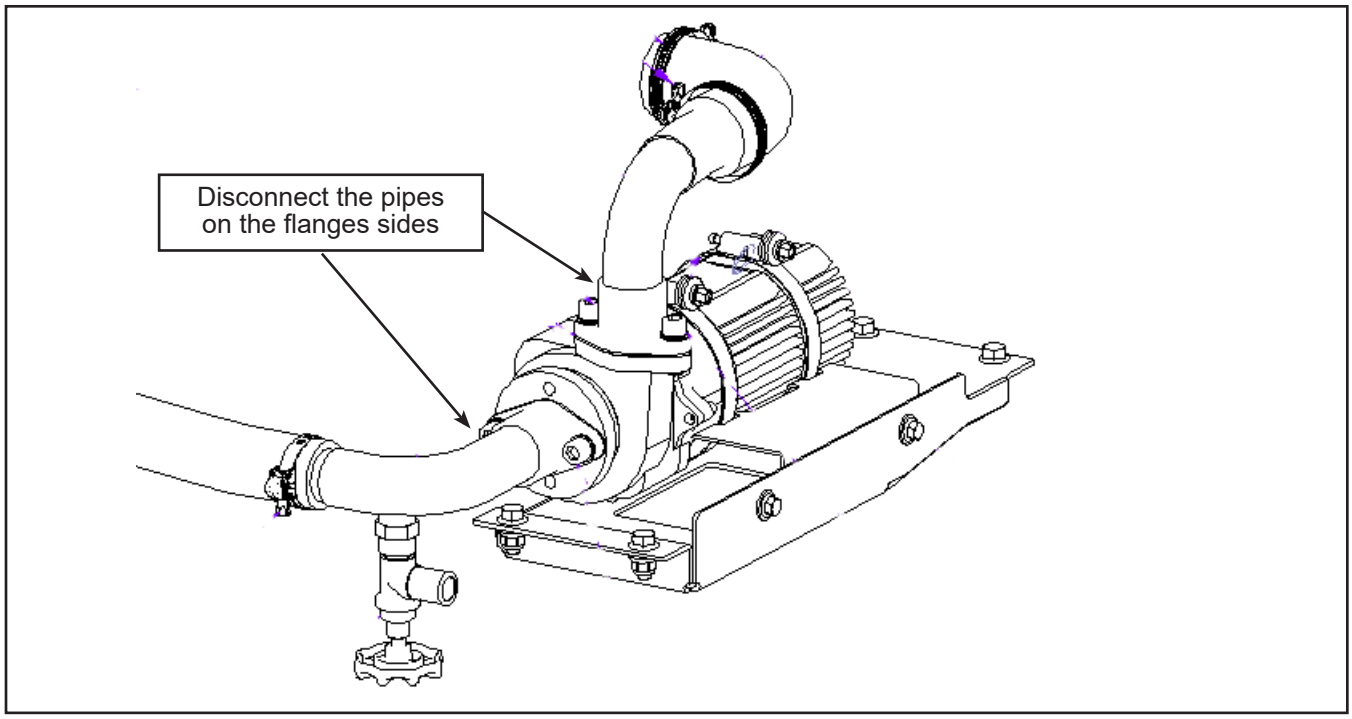


Figure 17 - Remove the Two Pipes at the Pump

2.5. Inspect the threaded holes for the presence of burr.

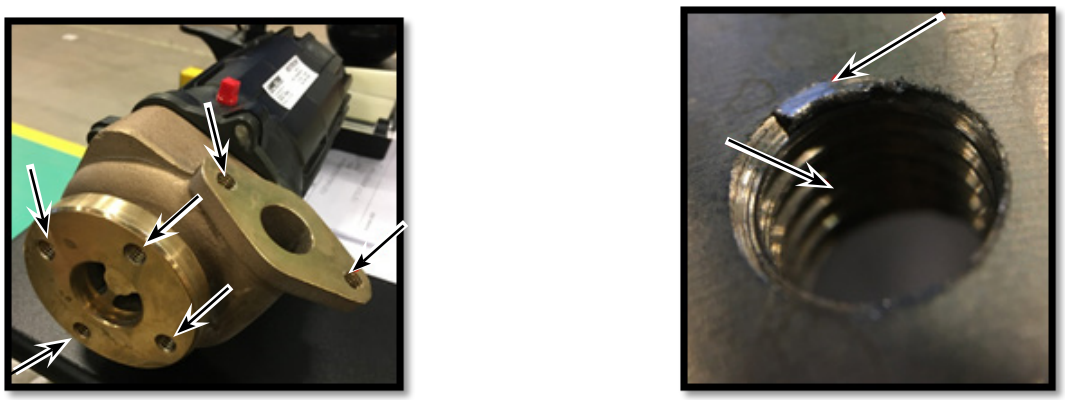


Figure 18 - Inspect the Threaded Holes for the Presence of Burr

2.6. If burrs are present, plug the pump openings and carefully remake the threads with a tap (3/8-16 UNC).

2.7. Clean the holes and make sure nothing can get int the pump (or the pipes) and contaminate the coolant system.

2.8. Install a new gasket 2389154 with new set of Nord-Lock washers N55583 and make sure to install the shorter bolt at the correct place. Torque shown on the figure below. Apply torque seal.

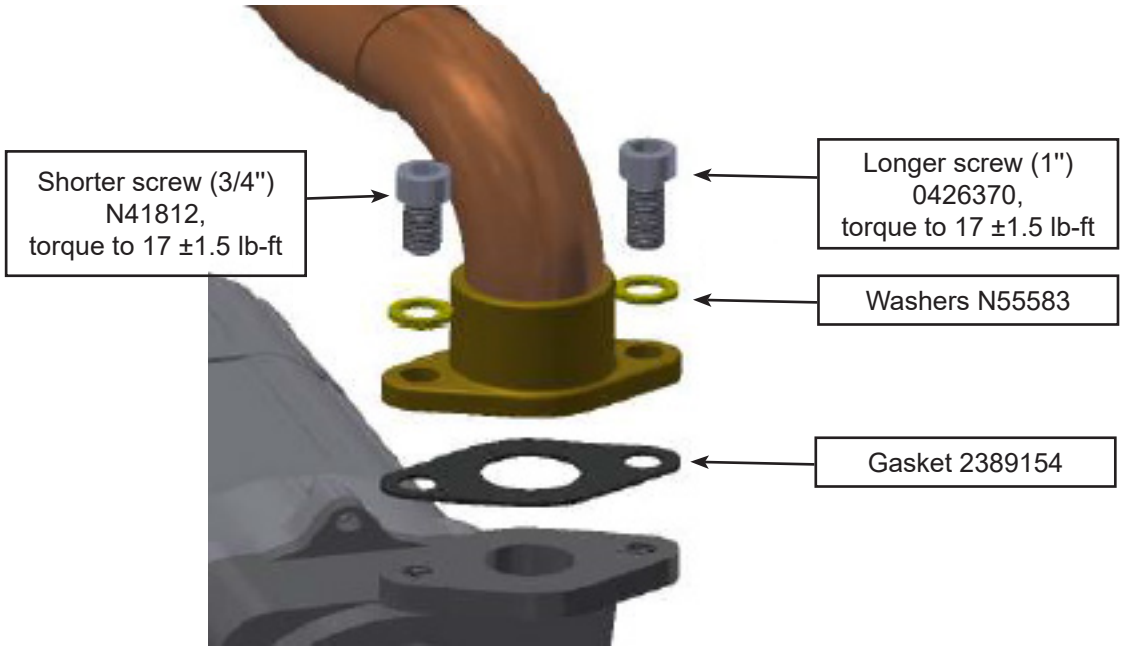


Figure 19 - Install a New Gasket and Washers

2.9. Secure the auxiliary heater back in place. Torque shown on figure 14.

2.10. Fill the coolant as per the procedure in the Annex at the end of this service bulletin.

2.11. Start the engine and inspect for leakage.

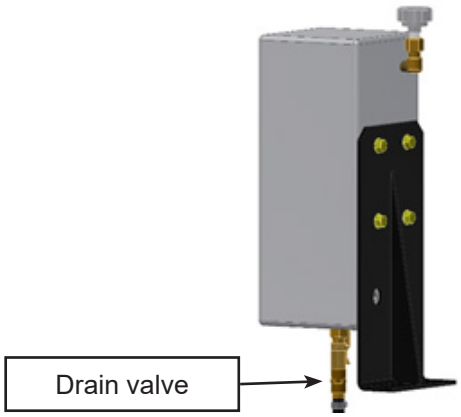
2.12. The vehicle may return in service.

❖

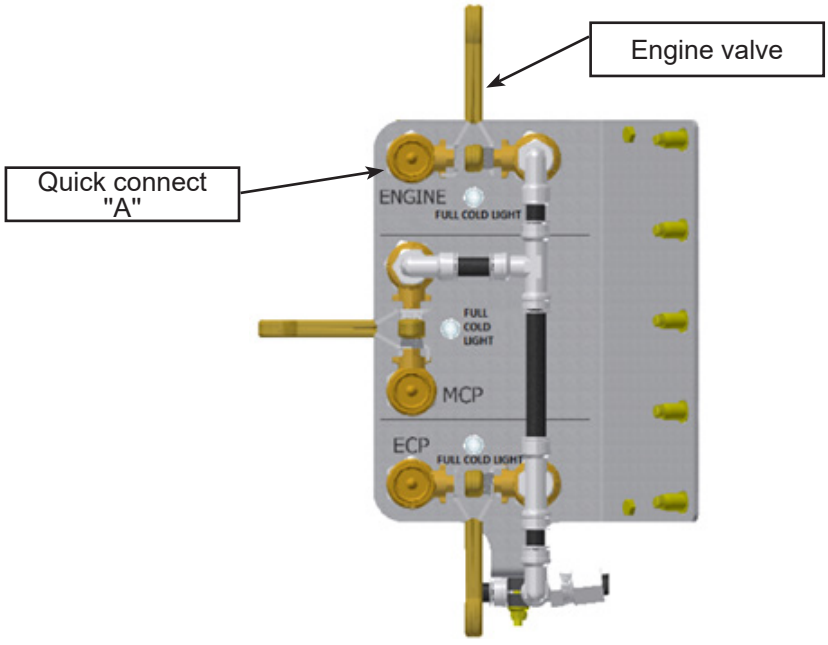
ANNEX A

PROCEDURE FOR FILLING THE VEHICLE COOLING SYSTEM

1. Place a temporary recipient under the bus and put the overfill tank drainpipe in it. See figure below.
2. Open the overfill tank drain valve located under it.



3. Put the valve of the targeted filling system "ENGINE" in horizontal position (Front-Rear). See figure below.
4. Fit the filling Hose on the quick connect ‘’A’’. See figure below.



5. Make sure the heating system drain valves are closed:

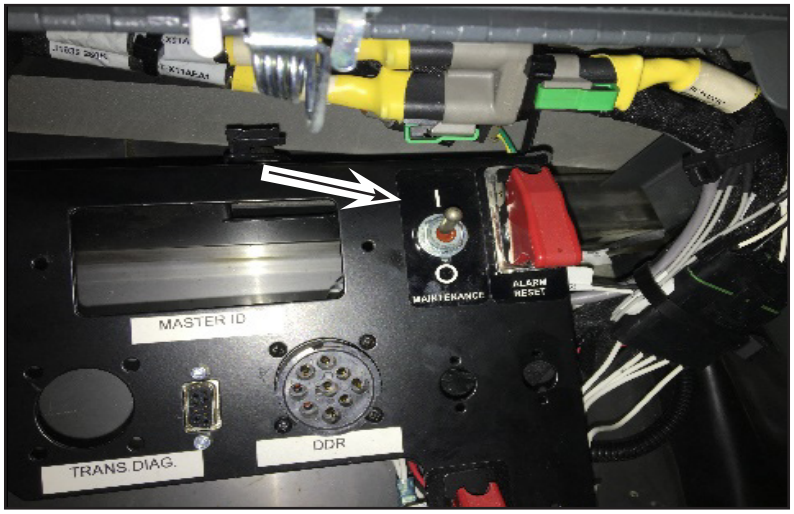
   - Floor radiator valves
   - Main drain valve located at the front of the bus, in the center, next to the defroster.

6. Make sure that the defroster supply/return valves are open when present under the dashboard.

7. Also, check that the recirculating pump valve is open.

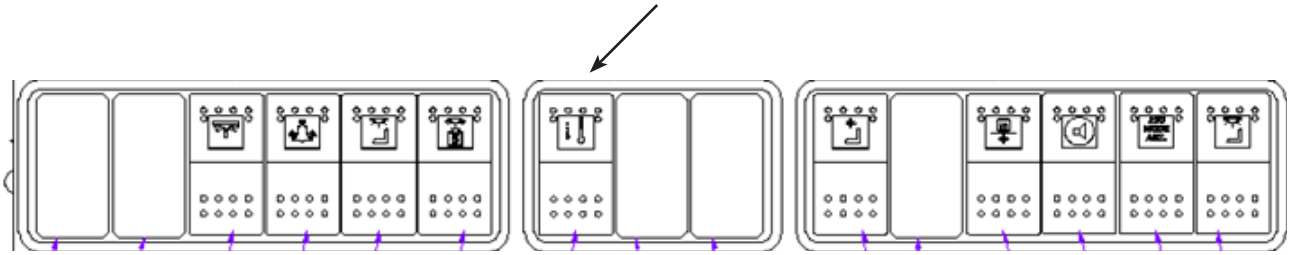
8. Ensure that the Master switch, located on the driver side console, is set to « OFF ».
   See figure below.

9. Set the Maintenance switch « ON » located in the overhead console (driver top, above the driver's seat on the left side). See figure below.



10. Set the dashboard heat switch to Heat to allow the coolant to fill. See figure below.

11. Activate HVAC switch located on the overhead switch panel. See figure below.



12. Set the Engine control switch, located on the Rear Engine Control Box in the engine compartment, in center position. See figure below.

13. Press the Engine start switch, located on the Rear Engine Control Box in the engine compartment, down for 5 seconds and release.

14. Press the Engine start switch down once more for 1 second and release. The center brake light should flash slowly.
15. Then press the Engine start switch down once more for 1 second and release. The center brake light should flash more quickly, and the circulating pump should activate, allowing the fluid to circulate.
16. Start filling the coolant in the system until you see the system light turn off or if the coolant begins to fill the overfill tank ("Catch Can").
17. Start the engine to purge the air from the coolant system and validate the cooling system level. To start the engine, set the Engine control switch to Rear and press on Engine start. Let the engine run at "Fast Idle" for ten minutes.
18. Validate the engine cooling system level using ACTIA, DEL light or Sight Glass on surge tanks. The ACTIA message, on the engine control box tachometer display, should stop flashing once the level is ok.

SYSTEM DE-AERATION

19. Let engine run at idle for 3 minutes.

20. Validate the engine cooling system level using ACTIA, DEL light or Sight Glass on surge tanks. The ACTIA message should stop flashing once the level is ok. If needed add coolant.

21. Once the coolant level is ok, continue the procedure.

22. Run the engine at 2200 RPM until the coolant temperature reaches 190º F (88 ºC) (approximately 10 min, depending on the ambient temperature) and then let it run for another 15 min. Make sure the coolant temperature does not exceed 200º (93 ºC).

Note: It's also possible to shut off coolant fans in the breaker box to accelerate the heating of the coolant.

23. Decrease gradually the engine speed to idle speed to prevent coolant splashing.

24. Validate the engine cooling system level using ACTIA, DEL light or Sight Glass on surge tanks. If needed add coolant.

25. When the coolant level gets stabilized:
    - Remove the filling hose "Quick Connect"
    - Put back the manual valve "ENGINE" back to close position.
    - Close the overfill tank drain valve.

26. Turn OFF the engine.

27. Engine control set back to « normal »

28. Set the Maintenance switch to "OFF".

COOLANT LEVEL VERIFICATION

NOTE: Coolant level verification results are only valid when the vehicle coolant is “cold”. It has been defined as coolant temperature being between 5°C and 40°C.

29. The coolant level must be checked once again after the vehicle coolant has cooled off enough to be considered cold.
30. If any coolant level adjustments are required, they must be made when the vehicle coolant is considered cold.
31. If the vehicle is equipped with a coolant overfill tank ("Catch Can"), the tank must be drained once the final coolant level has been established.