

REFERENCE:	Nova Bus Manuals
SECTION:	09: Engine and Cooling
RS N°:	MQR 7621-1973
EFFECTIVE IN PROD.:	N/A

APPLICATION DEADLINE: 2024SE27
CLAIM REFERENCE NUMBER: WB-5243

SUBJECT:	Radiator leaking coolant
JUSTIFICATION:	ECP radiator failures deemed to be due to overpressure events.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Installation of pressure relief valve on the radiator inlet vent	Novabus	Novabus	1.5 h
2	–	–	–	–

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	2023FE08	Initial release	Devanand

APPROVED BY:

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MATERIAL REQUIRED PER VEHICLE

QTY	PART N°	REV.	DESCRIPTION
LEVEL 1			
1	501894	A	TEE F-NPT-1/4(2X),M-NPT-1/4
1	N32717	A	FITTING 45 1/4-18 NPT F37
1	501308	B	LONG ADAPTER F-NPT-4, M-NPT-4
1	N34500-05	-	BRACKET 90 DEG
1	N0271003	-	SCREW HEX 3/8X0.625 SS
12	G5007996	-	CABLE TIE (0657558)
1	N107280	-	VALVE RELIEF 22PSI
5	2494772	-	CLAMP MINIATURE WORTH
1	N95062-51	-	HOSE SAE 30R7 3/8"ID X 23" LG
1	N95062-46	-	HOSE SAE 30R7 5/16" ID X 20.5"
1	N17882	X	BOLT M6X25 SS GR.A2 DIN933
1	501337	A	TEE F-NPT-1/4 (3X) (0444120)
1	N17904	X	WASHER LCK CURV M6 YZ TRIV 96H
1	N11183	C	WASHER FLAT M6 YZ TRIV 96H
1	N44881-02	B	SCREW M6X25 H YZ TRIV 96H 8.8
1	N38593	A	NUT LOCKNYL FL M6 ZP
3	504751	A	SPACER DUAL SWIVEL SADDLE
1	N67059	B	MOUNT "H" SERIES 3/8"
2	N101746	-	HOSE BARB TO MALE PIPE 125HBL
1	642196	-	CONNECTOR HB-6, M-NPT-4 (N12850)
LEVEL 2			
1	N95712-24	B	HOSE ASSEMBLY (TEFLON)
LEVEL 3			
1	N70053	-	CAP SURGETANK 18 PSI
LEVEL 1 SHOP SUPPLIES			
10 ml	N37086	-	LOCTITE THREAD SEALANT WHITE (cartridge of 50 ml)

Materials will be available within 168 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.

Superseded Parts:

0444134 - 501894 TEE F-NPT-1/4(2X),M-NPT-1/4

N31302 - 501308 LONG ADAPTER F-NPT-4, M-NPT-4

0444120 - 501337 TEE F-NPT-1/4 (3X)

N56836 - 504751 SPACER DUAL SWIVEL SADDLE

N12850 - 642196 CONNECTOR HB-6, M-NPT-4

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
New York City Transit - New York	L958	5439	5442	S92J9G9775533	S92J9G9775631	4
New York City Transit - New York	L959	5443	5443	S92J0H9776118	S92J0H9776118	1
New York City Transit - New York	LB59	5444	5484	S92J7H9776195	S92J6H9776379	41
New York City Transit - New York	LA23	5485	5530	S92J5J9776380	S92J6J9776517	46
New York City Transit - New York	LA73	8504	8507	L82J8J9776445	L82J8J9776476	4
New York City Transit - New York	LB29	5531	5566	S92J9J9776687	S92J6J9776873	36
New York City Transit - New York	LA76	8508	8633	L82J9J9776924	L82J8K9777144	125
New York City Transit - New York	LB99	5567	5602	S92J2J9776935	S92J5K9777000	36
New York City Transit - New York	LB78	8526	8526	L82J3K9776984	L82J3K9776984	1

STANDARD INSTALLATION INSTRUCTION FOR NPT FITTINGS

FITTING and ADAPTER NPT (National pipe threads)

The thread is tapered and the seal takes place by deformation of the threads.

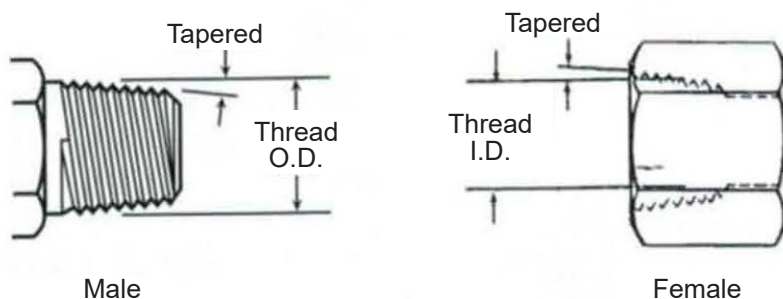


TABLE 1
NPT (National pipe threads)

Fitting size	Dash Size	Thread Size	Thread O.D. Male (in)	Female Thread I.D. (in)
1/8" NPT	-02	1/8-27	13/32	3/8
1/4" NPT	-04	1/4-18	35/64	1/2
3/8" NPT	-06	3/8-16	43/64	5/8
1/2" NPT	-08	1/2-14	27/32	25/32
3/4" NPT	-12	3/4-14	1 1/16	1
1" NPT	-16	1-11½	1 5/16	1 1/4
1 ¼" NPT	-20	1¼-11½	1 43/64	1 19/32
1 ½" NPT	-24	1½-11½	1 29/32	1 13/16
2" NPT	-32	2-11½	2 3/8	2 5/16

1.1 Tapered pipe thread Fitting (NPT) Assembly Instructions

- 1.1.1 Inspect port and fitting to ensure that both are free of contaminants and excessive burns and nicks.



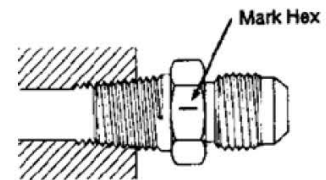
1.1.2 Apply a stripe of an anaerobic liquid pipe sealant (360 °) around the male threads leaving the first two threads uncovered.



Note: Always use proper thread sealants on tapered pipe threads. Do not confuse thread sealer (white Teflon) with thread locker (blue, green or red.)

1.1.3 Screw in the adaptor or fitting by hand to ensure threads are correctly engaged and tighten as much as possible by hand in to the port (Finger Tight).


1.1.4 Make a mark on hex portion of the part. Using a wrench, tighten an additional 1-1/2 turn.



Note: Do not use yellow torque seal to make this mark

Note: Never back off an installed pipe fitting to achieve proper alignment. Loosening installed pipe fittings will corrupt the seal and contribute to leakage and failure.

TABLE 2
NPT Thread Sealant

	Sealant	NovaBus # p/n	Features
	Loctite® 565	N37086	This product is designed for the locking and sealing of metal pipes and fittings.
	Loctite® 577	N74760	This product is designed for the locking and sealing of metal threaded pipes and fittings. Particularly suitable for use on Stainless Steel .
	Loctite® MR 5438	N95505	This product is design for the sealing of threaded Plastic pipe fittings and sensors.

STANDARD INSTALLATION INSTRUCTION FOR JIC FITTINGS

JIC 37° & SAE 45° FLARE TYPE FITTINGS AND ADAPTORS

The JIC 37° & SAE 45° fitting seal with metal to metal contact between the flare nose of the fitting and the flare tube face in the female connection.

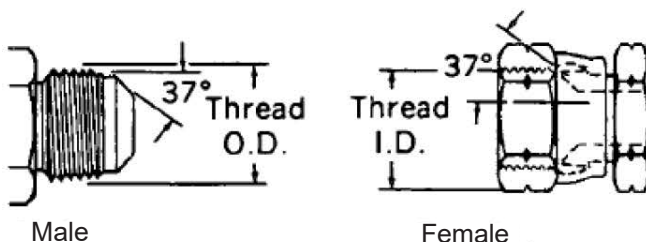


TABLE 3
JIC 37° & SAE 45° Flare Fitting

Dash Size	Nominal Thread Size	STEEL N-m (lb-ft)	BRASS N-m (lb-ft)
-04	7/16-20	15-16 (11-12)	10-11 (7-8)
-05	1/2-20	20-22 (15-16)	13-14 (9-10)
-06	9/16-18	24-28 (18-20)	16-18(12-14)
-08	3/4-16	52-58 (38-42)	34-38(25-28)
-10	7/8-14	77-85 (57-62)	50-55 (37-41)
-12	1 1/16-12	108-119 (79-87)	70-77 (52-57)
-16	1 5/16 -12	148-154 (108-113)	96-100 (71-74)
-20	1 5/8-12	173-182 (127-133)	112-118 (83-87)
-24	1 7/8-12	216-227 (158-167)	140-148 (103-109)
-32	2 1/2-12	334-352 (245-258)	217-229 (160-169)

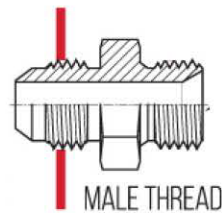
Note: In a case where there are two fittings of different material use torque value of the material with the lowest specification.

2.1 Recommended JIC 37° SAE 45° Flare Fitting Assembly instructions

- 2.1.1 Inspect contact surface and threads for any damage or material flaw.
(Do not apply sealant on threads).
- 2.1.2 Use template NT9999-01 to determine the thread size of the fitting or adaptor.

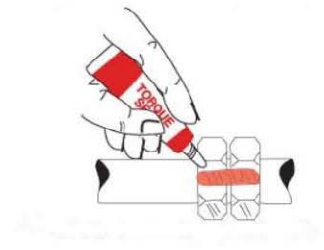


NT9999-01

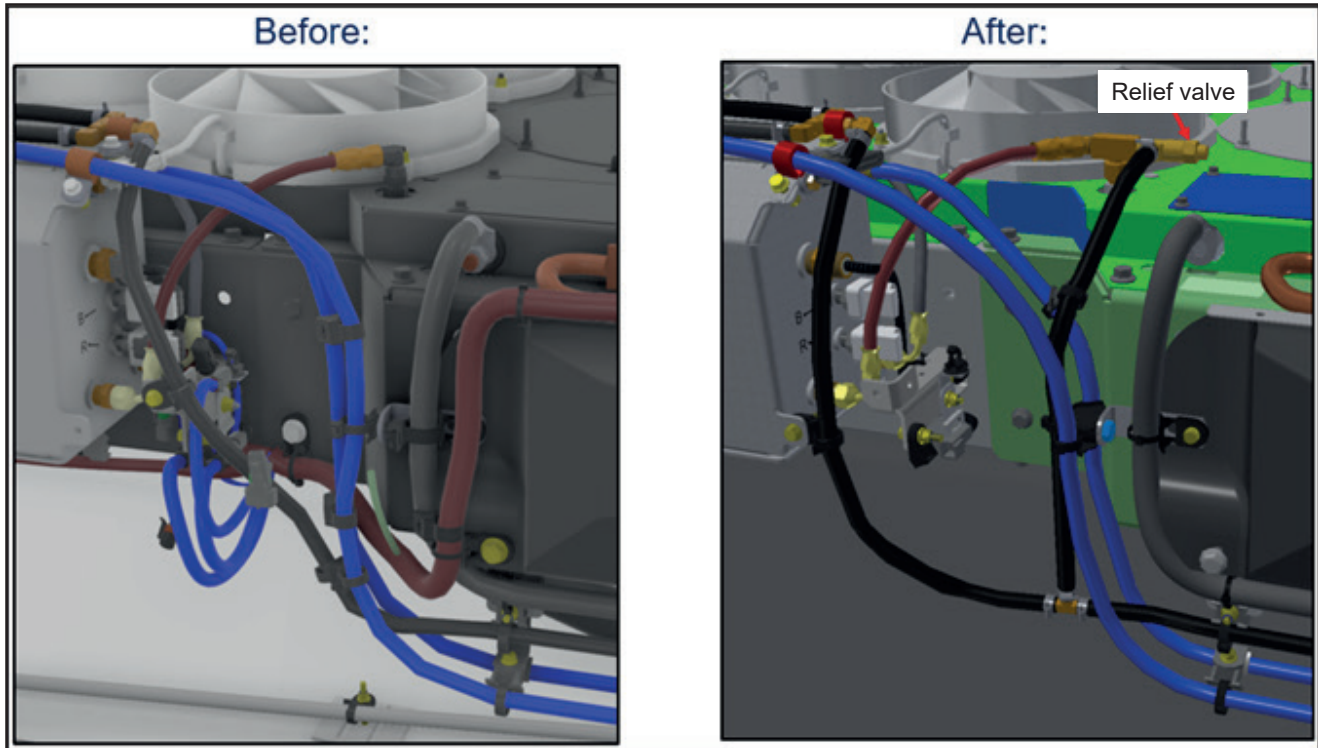


- 2.1.3 Screw in the adaptor or fitting by hand to ensure threads are correctly engaged and tighten by hand as much as possible.
- 2.1.4 Use thread size to determine torque to be applied.
- 2.1.5 Screw in the adaptor or fitting by hand to ensure threads are correctly engaged and tighten as much as possible by hand.
- 2.1.6 Using a wrench, complete tightening to the recommended torque.(see Table 5)

- 6.1.7 Apply anti-tamper seal (“Torque Seal”) to indicate torque has been applied (**AVT-0203**).



OVERVIEW OF MODIFICATION:



TOOLS REQUIRED:

- Square key
- Ratchet
- 10 mm socket
- 16 mm wrench
- 18 mm wrench
- 15 mm wrench
- ¼" socket (hose clamps)
- Airline blow gun

**WARNING**

FOLLOW YOUR INTERNAL SAFETY PROCEDURES.

PROCEDURE

- 1.1. Park the vehicle on an even surface with the transmission in neutral.
- 1.2. Set the master control switch in the STOP position and apply the parking brake.
- 1.3. Set the battery disconnect switch in the battery compartment to the OFF position.
- 1.4. Drain approximately 5 gallons of coolant from the engine cooling circuit. Refer to section 09: *Engine Cooling* of Nova Bus Maintenance Manual for draining of cooling system.
- 1.5. Open the rear radiator access panel and remove the lower grill (4 screws) (see figure 1). Retain the hardware.



Figure 1 - Location of Radiator Access Panel

1.6. Remove the radiator inlet vent hose on the radiator side only. Discard the elbow adaptor fitting. (see figure 2).

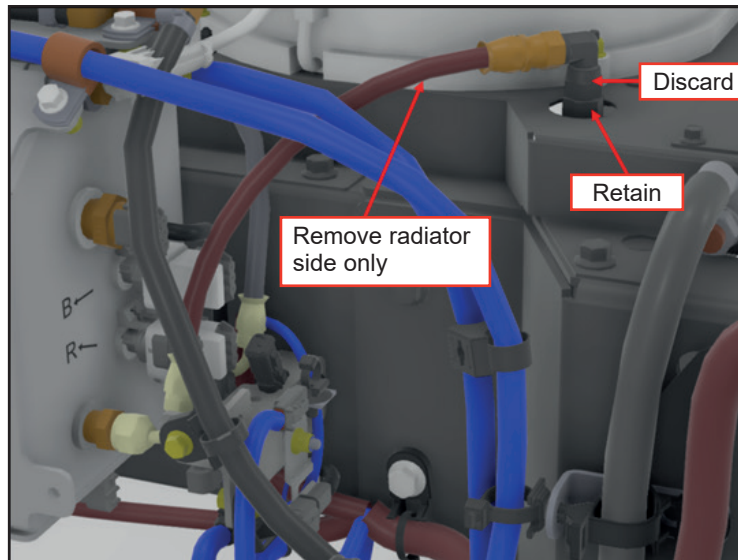


Figure 2 - Removal of Radiator Inlet Vent Hose

1.7. Remove fan, if needed to place back up wrench onto radiator inlet vent fitting (see figure 3).

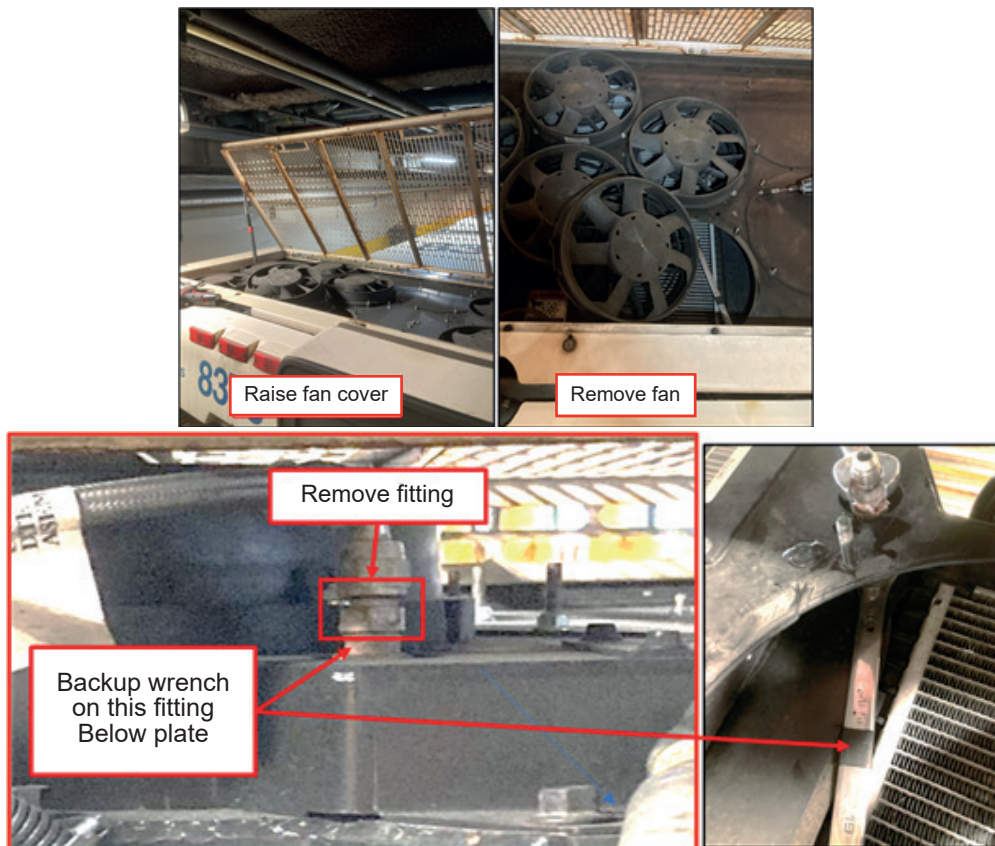


Figure 3 - Removal of Fan

1.8. Install the following parts on the radiator inlet vent line: Assembly order: 1-2, 3, 4 (see figure 4).

1. 501308 (Long Adapter F-NPT-4, M-NPT-4)
2. 501894 (Tee -NPT-1/4(2X),M-NPT-1/4)
3. N107280 (Valve Relief 22PSI)
4. N32717 (Fitting 45 1/4-18 NPT F37)

Or assemble all on a bench and install afterwards (if fan removed).

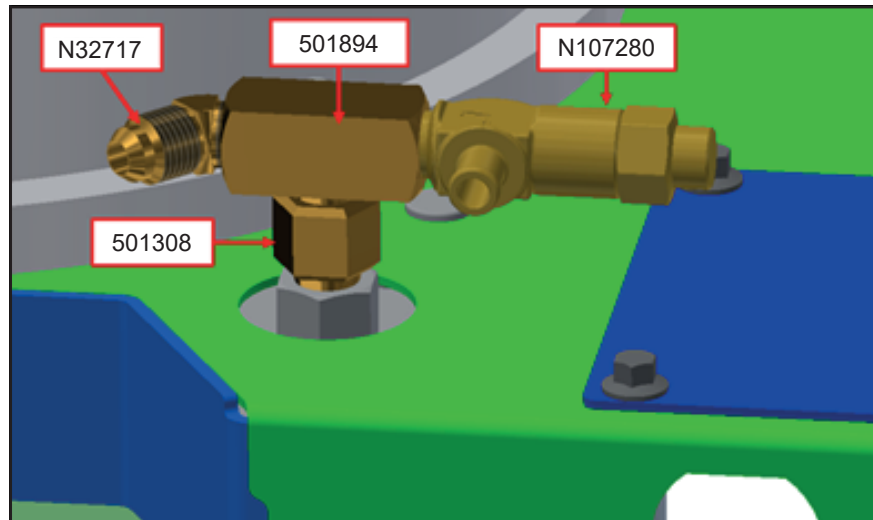


Figure 4 - Installation of Relief Valve

1.9. Re-install removed hose between radiator and surge tank. If a new hose is required, see level 2 BOM (N95712-24) (see figure 5).

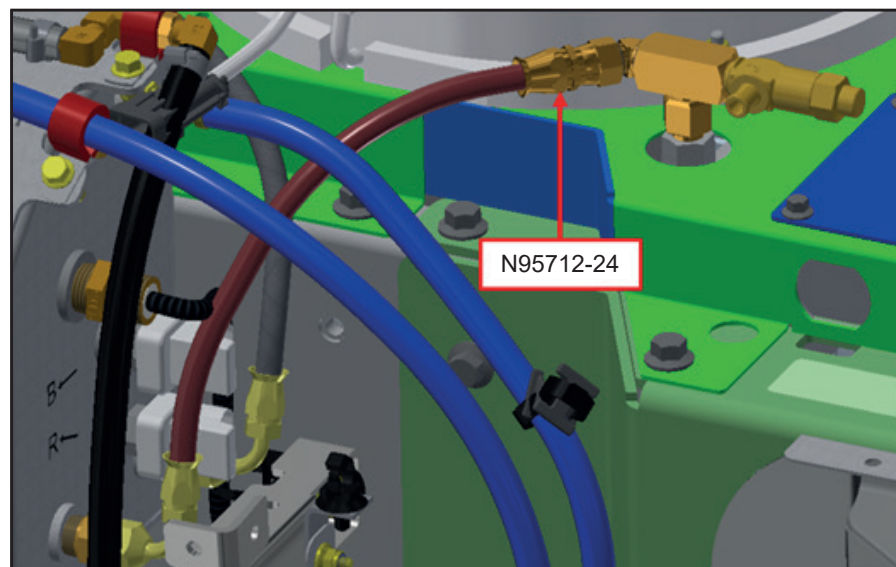


Figure 5 - Installation of Vent Hose

1.10. Remove the existing bolt, lock washer and washer from the power cable support mount.

- 1.11. Pre-install the mount N67059 and bolt N0271003 on bracket N34500-05 (see figure 6).
- 1.12. Install bracket N34500-05 under the existing support mount and re-install with new hardware:
 1. N11183 (Washer Flat M6)
 2. N17904 (Washer Lock M6)
 3. N17882 (Bolt M6X25)
- 1.13. Secure existing hoses with tie-wraps G5007996 on either side of the new mount.
- 1.14. Install the hose N95062-51 on the relief valve and route it into new mount.

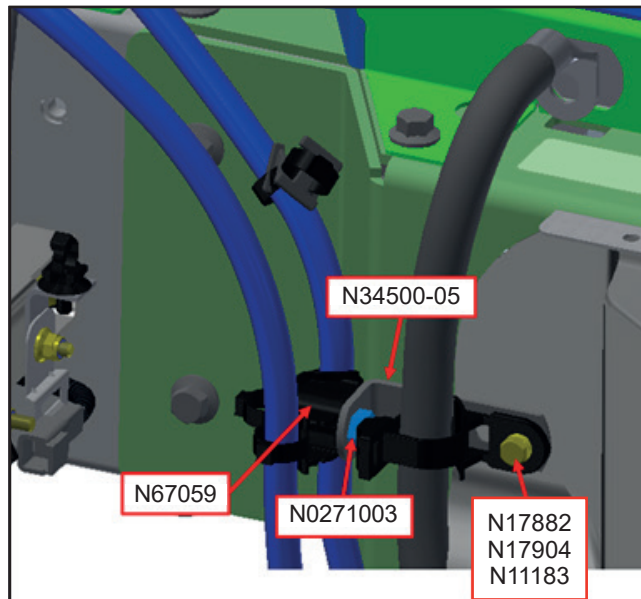


Figure 6 - Installation of New Support Mount

- 1.15. Align the hose N95062-51 with existing bottom (black) vent hose and cut to size accordingly to install the bottom T fitting 501337 with adaptors 642196 and 2x N101746. When securing the T-fitting to the hoses, the hoses must be leveled at a downwards or straight pitch. Do not allow the hose to bend upwards. Left figure not acceptable. Right figure is acceptable (see figure 7).

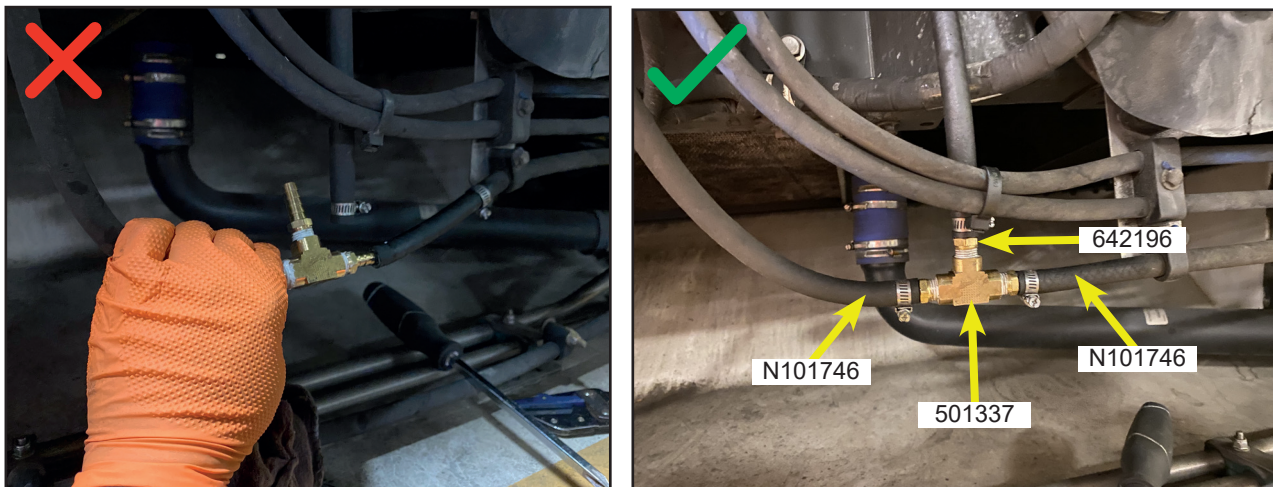


Figure 7 - Installation of T-Fitting Assembly

- 1.16. The routing of left side hose going to the T-fitting must be modified, use supplied hose N95062-46 and cut to size accordingly (see figure 8).
- 1.17. Relocate the plastic mount and secure with bolt N44881-02 (M6) and nut N38593 (M6).

**NOTE**

To ensure that the overflow line is not blocked. With the engine compartment door closed and using an airline blow fitting, blow a small amount of compressed air in the vent line going to the bottom of the bus to ensure that it is not blocked. A flow of air should be heard coming out of the catch tank overflow valve. (Ensure that the engine compartment overflow tank is not full beforehand – the overflow tank should vent to ambient air). If hose is blocked, it will have to be unblocked to ensure proper functioning.

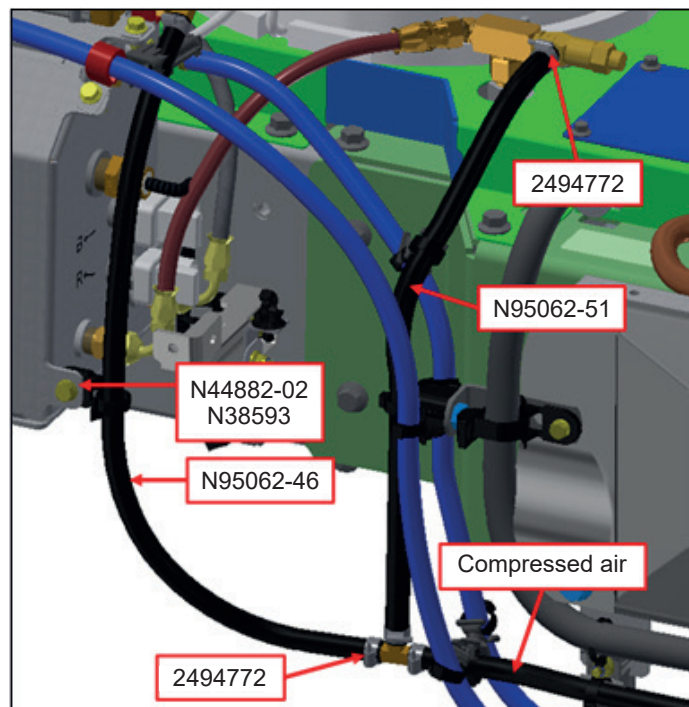


Figure 8 - Installation of Relief Valve Hose

- 1.18. Secure all the hose connections with clamps 2494772 (see figure 8).
- 1.19. Install spacer swivel mounts N56836 and tie wraps G5007996 to avoid direct contact between hoses as required.
- 1.20. Re-install fan (if removed).
- 1.21. Re-fill the engine coolant to the appropriate (FULL COLD) level. Refer to section 09: *Engine cooling* of Nova Bus Maintenance Manual for filling of cooling system.
- 1.22. Perform a pressure test (20psi maximum) on the engine side surge tank pressure cap and replace if required with N70053.
- 1.23. Inspect installation for leaks
- 1.24. Re-install the radiator grill and close the radiator access panel.
- 1.25. The vehicle can return in service. ❖