

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-5242

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:**PAGE 1 OF 14**

MATERIAL REQUIRED PER VEHICLE

QTY	PART N°	REV.	DESCRIPTION
LEVEL 1			
1	501309	–	ADAPTER F-NPT-3/8, M-NPT-3/8
1	N17891	–	ADAPTER M-NPT 3/8 M-JIC 9/16
1	501308	B	LONG ADAPTER F-NPT-4, M-NPT-4
1	641999	–	ELBOW 90 M-NPT-1/4,M-NPT-1/4
1	501337	–	TEE F-NPT-1/4 (3X)
1	N66401	A	ADAPTER NPT-M-4/JIC-6-M-FL37
1	N107280	–	VALVE RELIEF 22PSI
4	2494772	–	CLAMP MINIATURE WORTH
1	N95062-51	–	HOSE SAE 30R7 3/8"ID X 23" LG
1	N34500-04	–	BRACKET 90 DEG
1	N57807	–	MOUNT FIR TREE CABLE TIE
1	501337	–	TEE F-NPT-1/4 (3X)
1	N17882	X	BOLT M6X25 SS GR.A2 DIN933
1	N17904	X	WASHER LCK CURV M6 YZ TRIV 96H
1	N11183	C	WASHER FLAT M6 YZ TRIV 96H
2	N101746	–	HOSE BARB TO MALE PIPE 125HBL
1	642196	–	CONNECTOR HB-6, M-NPT-4
LEVEL 2			
1	N95712-23	A	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Superseded Parts:

0444002 - 501309 ADAPTER F-NPT-3/8, M-NPT-3/8

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

N12947 - 641999 ELBOW 90 M-NPT-1/4,M-NPT-1/4

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

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	L841	8094	8134	L82J2F4500959	L82JXF4501034	41
New York City Transit - New York	L841	8184	8206	L82J1F4501035	L82J0F4501057	23
New York City Transit - New York	L841	8252	8269	L82J2F4501058	L82J2F4501075	18
New York City Transit - New York	L842	8090	8093	L82J4F4501076	L82JXF4501079	4
New York City Transit - New York	L842	8207	8213	L82J6F4501161	L82J7F4501170	7
New York City Transit - New York	L842	8399	8408	L82J6F4501080	L82J2F4501089	10
New York City Transit - New York	L842	8318	8332	L82J9F4501090	L82J7F4501105	15
New York City Transit - New York	L842	8359	8373	L82J9F4501106	L82J3F4501120	15
New York City Transit - New York	L842	8409	8432	L82J5F4501121	L82JXF4501146	24
New York City Transit - New York	L842	8481	8491	L82J1F4501147	L82J8F4501159	11
New York City Transit - New York	L843	8135	8153	L82J5F4501197	L82J9F4501221	19
New York City Transit - New York	L843	8214	8230	L82J9F4501171	L82J1F4501195	17
New York City Transit - New York	L843	8270	8293	L82J0F4501222	L82J7F4501251	24
New York City Transit - New York	L843	8333	8347	L82J9F4501252	L82J1G9775016	15
New York City Transit - New York	L843	8374	8380	L82J3G9775017	L82J9G9775023	7
New York City Transit - New York	L844	8381	8170	L82J0G9775024	L82J0G9775105	82
New York City Transit - New York	L845	8171	8480	L82J2G9775106	L82J6G9775187	82

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.

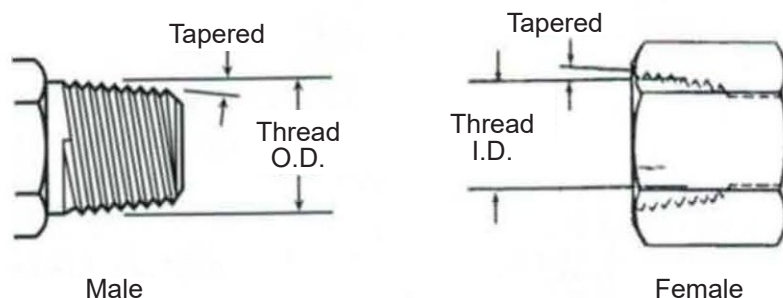


TABLE 1
NPT (National pipe threads)

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.



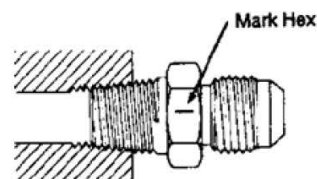
- 1.1.2 Apply a stripe of an anaerobic liquid pipe sealant (360 °) around the male threads leaving the first two threads uncovered.



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.

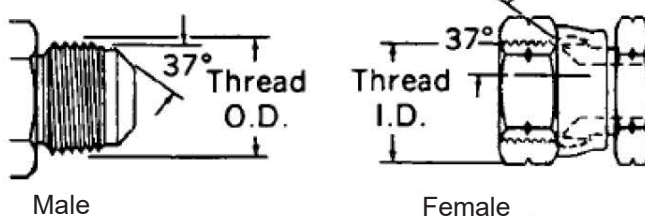


TABLE 3
JIC 37° & SAE 45° Flare Fitting

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)

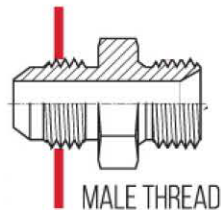
Note: In a case where there are two fittings of different material use torque value of the material with the lowest specification.

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.

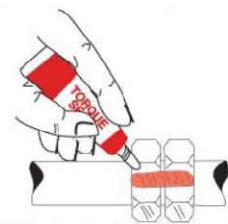


NT9999-01



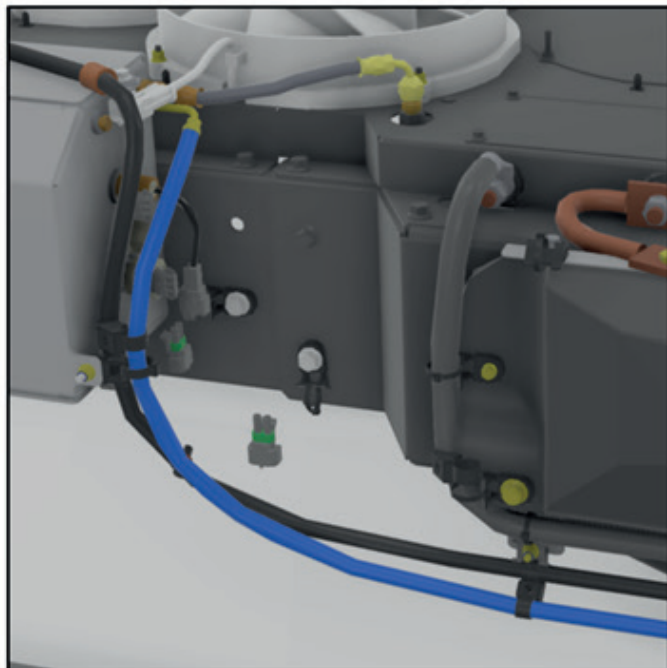
- 2.1.3 Screw in the adaptor or fitting by hand to ensure threads are correctly engaged and tighten by hand as much as possible.
- 2.1.4 Use thread size to determine torque to be applied.
- 2.1.5 Screw in the adaptor or fitting by hand to ensure threads are correctly engaged and tighten as much as possible 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**).

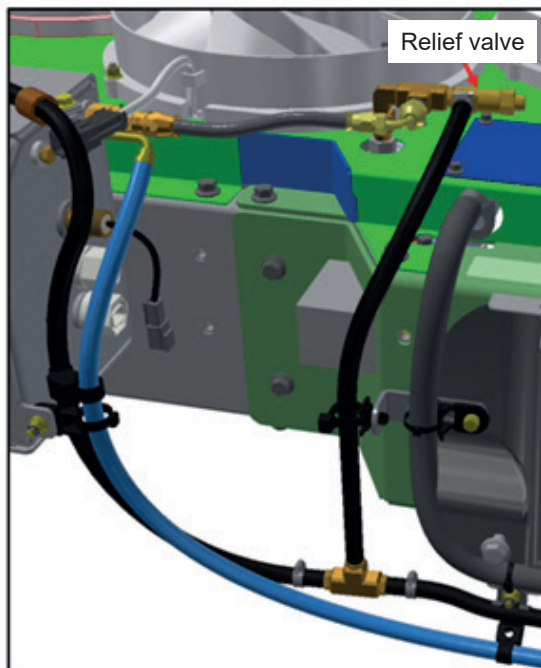


OVERVIEW OF MODIFICATION:

Before:



After:



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 attached to the surge tank. Discard both the adaptor fittings on each end (see figure 2).

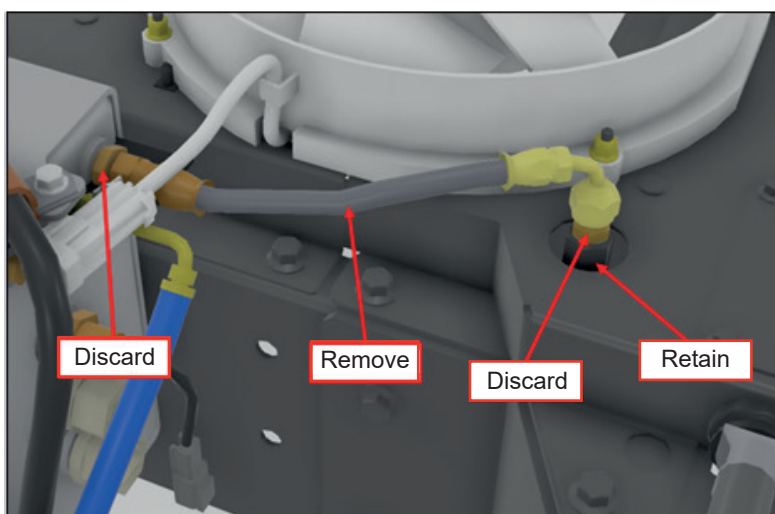


Figure 2 - Removal of Radiator Inlet Vent Hose

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

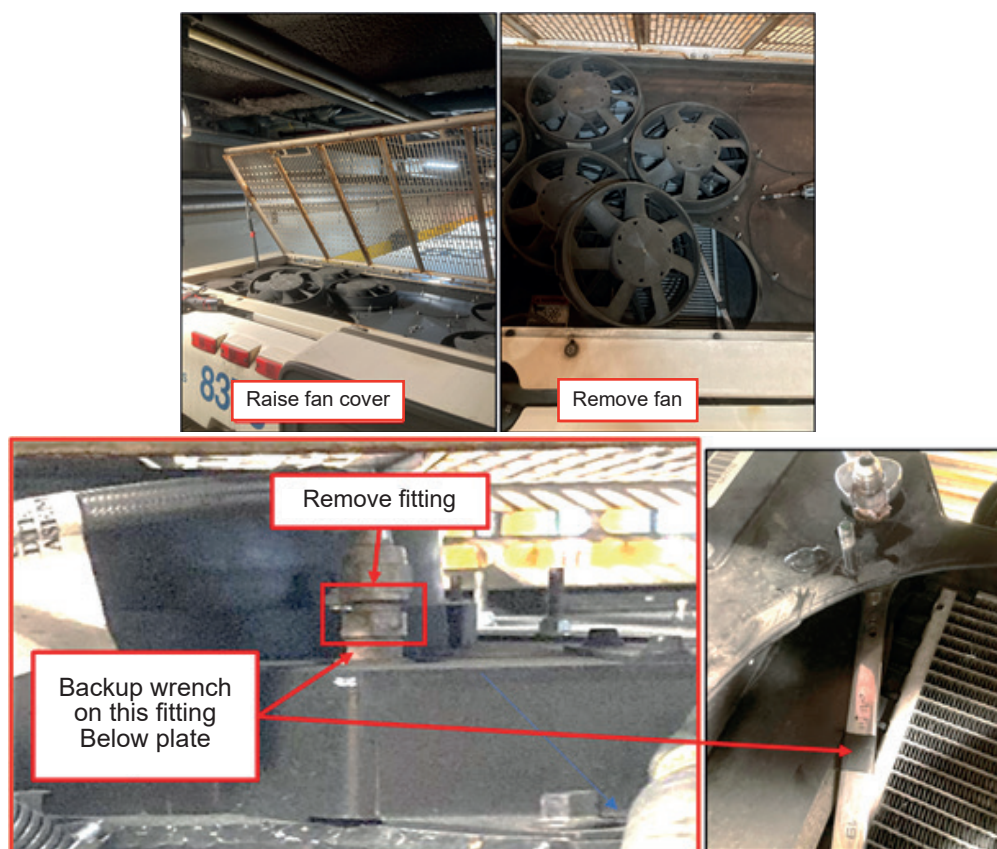


Figure 3 - Removal of Fan

- 1.8. On the surge tank side on the removed hose, install fittings 501309 (M-NPT-3/8 to F-NPT-3/8) and N17891 (M-NPT-3/8 to M-JIC-06-9/16) (see figure 4).

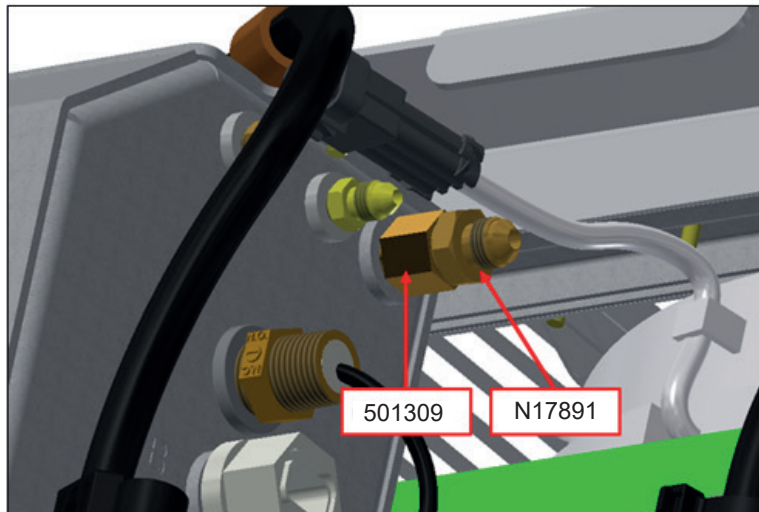


Figure 4 - Installation of Fittings

- 1.9. Install the following parts on the radiator inlet vent line: Assembly order: 1-2, 3-4, 5 (see figure 5).
1. 501308 (Long Adapter F-NPT-4, M-NPT-4)
 2. 641999 (Elbow 90 M-NPT-1/4, M-NPT-1/4)
 3. 501337 (Tee F-NPT-1/4 (3X))
 4. N107280 (Valve Relief 22PSI)
 5. N66401 (Adapter NPT-M-4, M-JIC-06-9/16)
- Or assemble all on a bench and install afterwards (if fan removed).

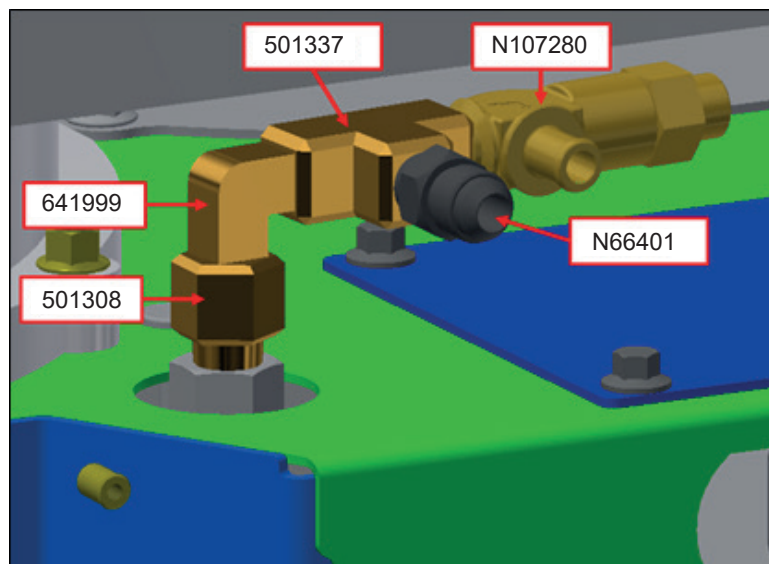


Figure 5 - Installation of Relief Valve

- 1.10. Re-install removed hose between radiator and surge tank. If a new hose is required, see level 2 BOM (N95712-23) (see figure 6).

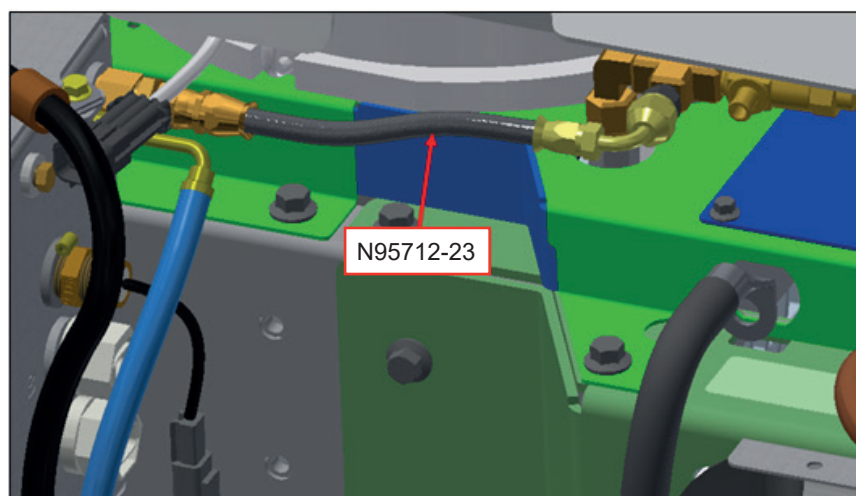


Figure 6 - Installation of Vent Hose

- 1.11. Remove the existing bolt, lock washer and washer from the power cable support mount (see figure 7).
- 1.12. Install bracket N34500-04 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. Install fir tree mount N57807.

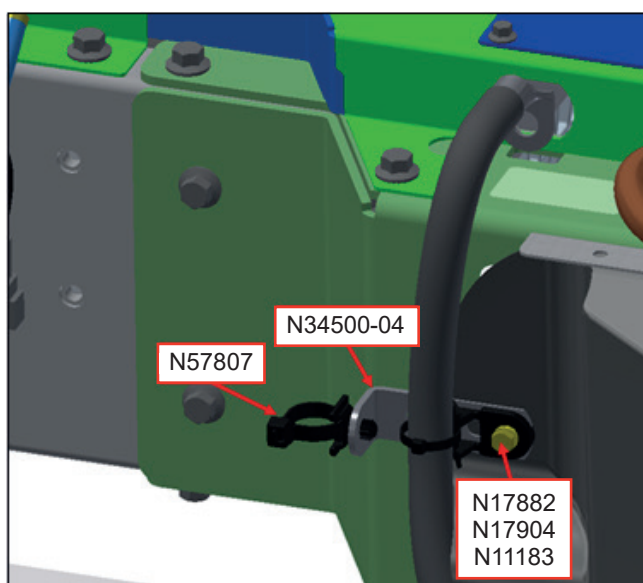


Figure 7 - Installation of Bracket

- 1.14. Install the hose N95062-51 on the relief valve and route it into the fir tree mount.
- 1.15. Align the hose N95062-51 with existing bottom (black) vent hose and cut all to size accordingly to install the bottom T fitting 501337 with adapters 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 8).

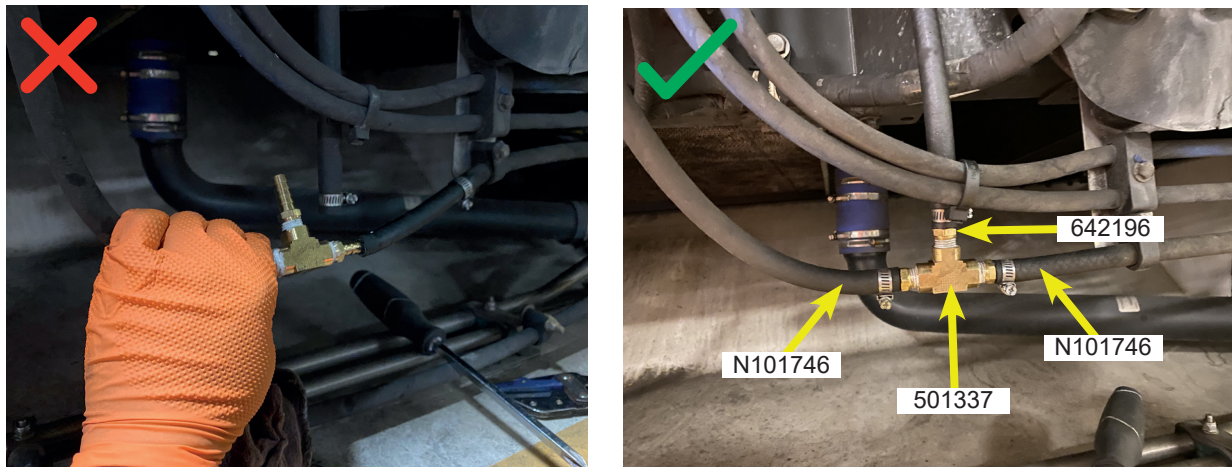


Figure 8 - Installation of T-Fitting Assembly



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.

- 1.16. Secure all the hose connections with clamps 2494772 (see figure 9).



Figure 9 - Installation of Relief Valve Hose

- 1.17. Re-install fan (if removed).
- 1.18. 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.
- 1.19. Perform a pressure test (20psi maximum) on the engine side surge tank pressure cap and replace if required with N70053.
- 1.20. Inspect installation for leaks
- 1.21. Re-install the radiator grill and close the radiator access panel.
- 1.22. The vehicle can return in service. ❖