REFERENCE:	Nova Bus Manuals
SECTION:	09: Engine cooling system
RS Nº:	MQR 7621-1078

APPLICATION DEADLINE:N/A

SUBJECT:	Engine cooling system
JUSTIFICATION:	To avoid the risk of air being trapped which could damage the EGR cooler.

LEVEL	DESCRIPTION	DIRECT CHARGES		TIME
		LABOUR	MATERIAL	
1	Follow the additionnal information to protect the cooling system.	Client	Client	–
2	–	–	–	–

MATERIAL

QTY	PART Nº	REV.	DESCRIPTION	REPLACES PART N°
LEVEL 1				
—	–	–	–	–
LEVEL 2				
–	–	–	–	–

DISPOSAL OF PARTS

REMOVED PARTS ARE:	DISCARDED	RETAINED	
	–	–	

REVISION HISTORY

REV.	DATE	CHANGE DESCRIPTION	WRITTEN BY
NR	2018DE20	Initial release	André Pelletier

APPROVED BY: Daniel Theriault

Digitally signed by Daniel Theriault
DN: cn=Daniel Theriault, o=Nova Bus, ou, email=daniel.theriault@volvo.com, c=CA
Date: 2019.01.10 08:15:15 -05'00'

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
Academy Bus - New Jersey	L333	—	—	L82U273000207	L82U473000211	5
Academy Bus - New Jersey	L339	—	—	L82U483000047	L82U883000052	5
Academy Bus - New Jersey	L340	—	—	L82U493000003	L82U193000007	5
Ames Transportation Agency - Iowa	L707	660	661	S92U5C4500159	S92U1C4500160	2
Ames Transportation Agency - Iowa	L904	6101	6104	S92J1G9775221	S92J7G9775224	4
Arrow Coach Line - Arkansas	L494	—	—	L82U793000397	L82U793000397	1
Austin - CMTA - Texas	L635	5001	5001	S92U7C4500163	S92U7C4500163	1
Austin - CMTA - Texas	L636	5002	5022	S92U1D4500306	S92U0D4500328	21
Austin - CMTA - Texas	L704	5051	5068	L82J7E4500471	L82J2E4500488	18
Austin - CMTA - Texas	LA17	5101	5107	S92J2H9775763	S92J3H9775769	7
Austin - CMTA - Texas	LA18	5151	5158	L82J0H9775770	L82J3H9775777	8
Buffalo New York - NFTA - CNG	LB22	1801	1816	L82KXJ9776486	L82K1J9776506	16
Central Oklahoma Transportation Authority	L619	—	—	L82X7C3000367	L82X7C3000367	1
Chicago Transit Authority - CTA - Illinois	L773	—	—	L82JXD4500429	L82J6D4500430	2
Chicago Transit Authority - CTA - Illinois	L811	7902	7949	L82J6E4500509	L82J4E4500556	48
Chicago Transit Authority - CTA - Illinois	L837	7950	7999	L82J6E4500655	L82J1E4500708	50
Chicago Transit Authority - CTA - Illinois	L847	8000	8049	L82J1E4500773	L82JXE4500822	50
Chicago Transit Authority - CTA - Illinois	L848	8050	8099	L82JXF4500823	L82J1F4500872	50
Chicago Transit Authority - CTA - Illinois	L849	8100	8149	L82J5F4500874	L82J3F4500923	50
Chicago Transit Authority - CTA - Illinois	L850	8150	8199	L82J5F4500924	L82J6G9775013	50
Chicago Transit Authority - CTA - Illinois	L943	8200	8324	L82JXG9775225	L82J3G9775406	125
Chicago Transit Authority - CTA - Illinois	LB58	8325	8349	L82J7J9776906	L82J8J9776946	25
Clemson Area Transit - South Carolina	L617	—	—	S92U5C4500002	S92U5C4500002	1
Clemson Area Transit - South Carolina	L769	—	—	S92U1D4500418	S92U1D4500418	1
Clemson Area Transit - South Carolina (ref. L641)	L722	—	—	L82U1C4500005	L82U5C4500010	5
CNG Demo (ref. L957)	L840	8093	8093	L82J0E4500716	L82J0E4500716	1
CT Transit - Connecticut	L554	1041	1065	S92U1A4000139	S92U0A4000164	25
CT Transit - Connecticut	L571	1101	1110	S92YXB4000144	S92Y4B4000169	10
CT Transit - Connecticut	L814	1462	1473	S92LXE4500717	S92L4E4500728	12
CT Transit - Connecticut	L815	1426	1429	S92L0E4500709	S92L0E4500712	4
Demo- Altoona HEV BAE (REF LA95)	LB38	—	—	L82L7H3750940	L82L7H3750940	1
Démo US	L724	7300	7301	S92Y1D4500275	S92Y3D4500276	2
Démo US	LA13	—	—	L82J4G9775611	L82J5G9775620	10
Démo-2017	L980	—	—	L82J1G9775565	L82J9G9775569	3
Duke University - North Carolina	L651	—	—	S92Y1B4000145	S92Y3B4000146	2
Duke University - North Carolina	L938	-	-	L82L8G9775399	L82L0G9775400	2
Duke University - North Carolina	LB08	—	—	L82L9J3751562	L82L2J3751578	3
Duke University - North Carolina	LA38	—	—	L82L9H9775994	L82L9H9775994	1
Duke University - North Carolina	LA39	—	—	S92LXH9775995	S92LXH9775995	1
Duke University - North Carolina (ref. L703)	L641	—	—	L82U9C4500012	L82U1C4500022	8
Gaylord Opryland - Nashville, Tennessee	L353	—	—	L82U583000008	L82U383000010	3
Hampton Roads - Virginia (L754)	L802	—	—	L82U1D4500278	L82UXD4500408	7

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
Honolulu - Hawaii	L559	201	224	L82U6A4000113	L82U7A4000136	24
Houston - Texas	L737	1510	1510	S92U4D4500297	S92U4D4500297	1
Houston - Texas	L755	1511	1579	S92U4D4500333	S92U8D4500402	69
Houston - Texas	L951	1915	1915	L82J0G9775203	L82J0G9775203	1
Houston - Texas	L952	1580	1580	S92J5G9775318	S92J5G9775318	1
Houston - Texas	L981	1916	1994	L82J8G9775434	L82J4G9775513	79
Houston - Texas	L982	1581	1582	S92J5G9775514	S92J7G9775515	2
Houston - Texas	L982	1583	1583	S92J9G9775516	S92J9G9775516	1
Houston - Texas	L982	1584	1586	S92J2G9775518	S92J4G9775522	3
Houston - Texas	L982	1587	1587	S92J8G9775524	S92J8G9775524	1
Houston - Texas	L982	1588	1599	S92J1G9775526	S92J5G9775545	12
Houston - Texas	LB63	2050	2050	L82K2J9776708	L82K2J9776708	1
Houston - Texas	LB72	2051	2069	L82K6J9776887	L82K4J9776905	19
Krapf's Coaches - Pennsylvania (ref. L833)	L754	—	—	L82U4D4500405	L82U4D4500405	1
LYNX - Florida	L725	—	—	S92Y9D4500329	S92Y5D4500330	2
LYNX - Florida	L764	—	—	S92Y7D4500331	S92Y9D4500332	2
LYNX - Florida	L785	—	—	S92L6E4500505	S92L8E4500506	2
Marketing Sales Demo - MSD 6 Houston	L628	—	—	L82U8C4500003	L82UXC4500004	2
Minnesota Valley Transit Authority - MVTA	L706	4252	4258	L82U4C4500127	L82UXC4500133	7
MTD - Santa Barbara, California	L730	—	—	S92J8E4500567	S92J1E4500569	3
New York City Transit - New York	L536	1200	1201	S92U793000490	S92U993000491	2
New York City Transit - New York	L545	1202	1289	S92U5A4000001	S92U0A4000098	88
New York City Transit - New York	L608	8000	8014	L82U6B4000047	L82U0B4000061	15
New York City Transit - New York	L620	8015	8074	L82U2B4000062	L82U7B4000123	60
New York City Transit - New York	L621	8075	8089	L82U9B4000124	L82U9B4000138	15
New York City Transit - New York	L643	5895	5895	S92U1B4000143	S92U1B4000143	1
New York City Transit - New York	L670	5770	5894	S92U9B4000147	S92UXC4500061	125
New York City Transit - New York	L681	5896	5283	S92U2C4500023	S92U9C4500195	122
New York City Transit - New York	L692	5284	5363	S92U3C4500158	S92U3D4500274	80
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

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
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
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	LA23	5485	5530	S92J5J9776380	S92J6J9776517	46
New York City Transit - New York	LA73	8504	8507	L82J8J9776445	L82J8J9776476	2
New York City Transit - New York	LA76	8508	8525	L82J9J9776924	L82J6J9776976	18
New York City Transit - New York	LB29	5531	5566	S92J9J9776687	S92J6J9776873	36
New York City Transit - New York	LB59	5444	5484	S92J7H9776195	S92J6H9776379	41
New York City Transit - New York	LB99	5567	5602	S92J2J9776935	S92J5K9777000	36
New York Demo	L840	8091	8091	L82J5E4500714	L82J7E4500714	1
New York Demo	L940	—	—	S92J7F4501257	S92J7F4501257	1
NFTA - Buffalo, New York	L877	1501	1501	L82K0F4500984	L82K0F4500984	1
NFTA - Buffalo, New York	L897	1502	1520	L82K1F4501223	L82K1G9775008	19
NFTA - Buffalo, New York	L947	1601	1624	L82KXG9775248	L82K3G9775320	24
NFTA - Buffalo, New York	LA24	1701	1716	L82K3H9775822	L82K5H9775837	16
NFTA - Buffalo, New York	LA30	1717	1724	L82J8H9775838	L82J5H9775845	8
NFTA - Buffalo, New York	LB21	1817	1824	L82J9J9776518	L82J8J9776526	8
NYCT SPLIT BLOCK	LB78					1
Puerto Rico (ref. L754)	L788	—	—	L82UXD4500277	L82U0D4500305	16
San Antonio Texas	L990	-	-	L82K5G9775464	L82K5G9775464	1
San Antonio Texas	LA10	422	446	L82K9G9775628	L82K8G9775653	25
San Antonio Texas	LA22	447	555	L82K8H9775654	L82K0H9775762	109
San Antonio Texas	LA34	556	580	L82K0H9775857	L82K8H9775881	25
San Antonio Texas	LA35	581	691	L82KXH9775882	L82K8H9775993	111
San Antonio Texas	LB26	692	735	L82KXJ9776536	L82K6J9776579	44
San Antonio Texas	LB43	970	987	L82K4J9776791	L82K1J9776828	18
San Joaquin County - California	L768	—	—	S92L4D4500422	S92L3D4500427	6
SEPTA - Pennsylvania	L728			L82W7D4500335	L82W7D4500335	1
SEPTA - Pennsylvania	L741	7355	7355	S92L4E4500504	S92L4E4500504	1
SEPTA - Pennsylvania	L742	7371	7414	S92L6E4500729	S92L7E4500772	44
SEPTA - Pennsylvania	L743	7356	7370	S92L1E4500489	S92L2E4500503	15
SEPTA - Pennsylvania	L744	8601	8689	L82L7E4500570	L82LXE4500661	89
SEPTA - Pennsylvania	L745	7415	7415	S92L0F4500873	S92L0F4500873	1
SEPTA - Pennsylvania	L746	7416	7454	S92L7F4500952	S92L8F4501012	39
SEPTA - Pennsylvania	L749	7302	7354	S92Y7D4500409	S92L2E4500470	53
SEPTA - Pennsylvania	L861	7300	7484	S92L5G9775188	S92L8G9775220	32

CLIENT	ORDER	ROAD NUMBER		VIN (2NVY/4RKY...)		QTY
		FROM	TO	FROM	TO	
University of Alabama - Alabama	L295	7001	7001	L82U173000134	L82U173000134	1
University of Alabama - Alabama	L296	7002	7003	L82U373000135	L82U573000136	2
University of Alabama - Alabama	L310	7004	7013	L82U973000267	L82UX73000276	10
University of Alabama - Alabama	L311	7014	7017	L82U173000277	L82U173000280	4
University of Alabama - Alabama	L479	479-1	479-1	L82U394000002	L82U394000002	1
University of Alabama - Alabama	L480	480-1	480-1	L82U594000003	L82U594000003	1
University of Alabama - Alabama	L573	—	—	L82U9A4000137	L82U0A4000138	2
University of Alabama - Alabama	L640	—	—	L82U9B4000141	L82UOB4000142	2
University of Alabama - Alabama	L671	7024	7025	L82U5C4500119	L82U1C4500120	2
University of Alabama - Alabama	L727	7026	7027	L82U4D4500310	L82U6D4500311	2
University of Alabama - Alabama	L787	7028	7029	L82J2E4500507	L82J4E4500508	2
University of Alabama - Alabama	L902	7030	7030	L82J2F4500993	L82J4F4500994	2
University of Alabama - Alabama	L961	7032	7033	L82J7G9775294	L82J9G9775295	2
University of Alabama - Alabama	LA02	7034	7037	L82J8G9775546	L82JXG9775550	4
University of Colorado - Colorado	L336	—	—	L82U773000266	L82U773000266	1
University of Colorado - Colorado	L427	—	—	S92U693000027	S92U693000027	1
University of Colorado - Colorado	L428	—	—	S92U893000028	S92U893000028	1
University of Colorado - Colorado	L627	—	—	S92UXB4000139	S92U6B4000140	2
Walt Disney World - Florida	L535	1204	1213	L82UXA4000003	L82U0A4000012	10
Walt Disney World - Florida	L763	—	—	S92U0D3001019	S92U4D3001024	6

CAUTION

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

ADDITIONAL INFORMATION

COOLING SYSTEM DEPRESSURIZATION

- **Whenever the engine cooling system is depressurized, either by the tank cap or by the release valve button or by one of the valves from the system, it is mandatory to allow the engine to cool down below 50°C (120°F) before the vehicle goes back in service. This method will reduce the risk of air being trapped which could cause damage to the cooling system.**

Do not operate the engine with the pressure cap off at temperature above 93 °C (200 °F). This can result in potential engine damage by cavitation of the water pump and localized boiling.

TOPPING OFF COOLANT

- **Cummins Inc. does not recommend opening the cooling system for service or maintenance when the temperature is above 50 °C (120 °F). If you open the system while hot, allow it to cool below 32 ° C (90 ° F), then adjust the level to its maximum when cold. Maintenance on a hot cooling system may prevent the system from generating sufficient pressure resulting in potential engine or components damages by cavitation of the water pump and localized boiling.**
- **System pressure is only generated with temperature rise of coolant. Closing the cooling system while hot will not allow pressure to build.**

COOLING SYSTEM FILLING

- **If the coolant system needs to be filled, make sure air is vented during the fill process to prevent air locks. Follow the latest procedure, from 2018 or more recent, in your maintenance manual SECTION 09: ENGINE COOLING.**