

Compliance Invoice Adjustment Form (CARB)

CARB USE ONLY

Invoice Name	MSF241373
Invoice Date	Jun 25, 2025

COMPANY INFORMATION

Company Name	Volvo Car USA LLC
Address	270 THREE POINT DRIVE
City	RIDGEVILLE
State	SC
Zip	29472
Country	United States
Contact Name	Bryant Lowry
Contact Telephone Number	8432763791
Contact Email	bryant.lowry@volvocars.com
CARB Customer Number	CCAM000086

APPLICATION INFORMATION

Payment Row Number	Product Description or File Name	Model Year/Calendar Year	Unique Application Identifier: Test Group, Engine Family, Trailer Family, Vehicle Family, ZEP Family, if applicable (ID listed in payment row must match the unique identifier given to the certification application)	Category Type	Fee Type	Amount
1	EX90 Twin Performance/ EX90 Twin	Model Year 2026	TVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00
2	Polestar 3 LRDM Performance Pack Polestar 3 LRDM	Model Year 2026	TVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00
3	EX90 LRSM	Model Year 2026	TVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00
4	Polestar 3 LRSM	Model Year 2026	TVVXT00.0ZPH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00

Total Due	\$ 48,444.00
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I, Bryant Lowry, attest that any information provided is true, accurate, and complete.
(Respondent Party Signature Here)

Application for Certification – Part 1

2026 Model Year

Test Group	Applicable Standards	Certification Summary Information
TVVXT00.0ZVG	Calif: Exhaust: LEV IV – ZEV Evap: Not Applicable (Electric)	TVVXT00.0ZVG
	Fed: Exhaust: Tier 3 Bin 0 Evap: Not Applicable (Electric)	

Durability Group: TVVXEEVNNBEV

Evap. Families: Not Applicable (Electric Vehicle)

Durability Group Description: Electric Vehicle / BEV / ZEV

Test Group Description: Electric Vehicle

Carlines Covered:

- EX90 Twin Motor Performance
- EX90 Twin Motor Performance (21 inch Wheels)
- EX90 Twin Motor
- EX90 Twin Motor (21 inch Wheels)

Fuel Economy Data Vehicles Tested:

Configuration 00

EX90 Twin Motor Performance – Vehicle ID 202625
Covers for EX90 Twin Motor
Test number: MCT TVVX10092005

Configuration 01

EX90 Twin Motor Performance (21 inch Wheels) – Vehicle ID 202625
Covers for EX90 Twin Motor (21 inch Wheels)
Test number: MCT TVVX10092006

EPA Response Requested By:

October 10, 2025

For Questions, Contact:

Bruno DiGennaro, Phone 201-218-7106

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The following sections are Not Applicable for All Electric Vehicle / BEVs / ZEVs:

- S03.02 EVAP Descriptions
- S04.02 EVAP Deterioration Factors
- S04.03 Exhaust Emission Durability Test Procedure
- S04.05 Battery Aging Procedure (Hybrids only)
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- S07.02 EVAP Testing
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- S09.01 OBD II System Statement
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- S11 AECD Description
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- S12.07 California EVAP supplemental Information
- S17.01 Fill Pipes and Fuel Tank
- S17.02 Fill Pipes Specifications
- S17.04 CARB Emission Test Results

Section 04.04.01

EXHAUST EMISSIONS DETERIORATION FACTORS

Test Groups: TVVXT00.0ZVH & TVVXT00.0ZVG

Durability Group: TVVXEEVNNBEV

Original Test Groups: TVVXT00.0ZVH & TVVXT00.0ZVG

Original Durability Group: TVVXEEVNNBEV

Additive CREE DF set to Zero

Durability Data Type: NEW

Drive Mode: Not Applicable

Emission Cycles: All

Rounded Additive DFs	THC [gram]	NMHC [gram]	NMOG [gram]	CO [gram]	NOx [gram]	C02 [g/mile]	N2O [g/mile]	CH4 [g/mile]	PM [g/mile]	CREE [g/mile]	NMOG+NOx [g/mile]
4K-50K	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
4K-120K	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	0.000	n.a
4K-150K	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a

Section 05.01**Test Group Description****Test group: TVVXT00.0ZVG**

Vehicle Class: LDT

Certification Summary Information: TVVXT00.0ZVG

Applicable Emission Standards: See Certification Summary Information in section 07

Emission standard class: ZEV / Tier IV Bin0

Engine Type /Engine Configuration /Engine displacement /Cylinder head design /
Method of aspiration: N/A

Rated Power & Torque: Front & Rear drive motors:

EX90 Twin Motor Performance:Rear280 kW @5600-8000 rpm / 480 Nm @ 0-5500 rpmFront220 kW @5400-8000 rpm / 390 Nm @ 0-5300 RPM**EX90 Twin Motor:**Rear205 kW @5000-15000 rpm / 405 Nm @ 0-4800 rpmFront130 kW @4700-11000 rpm / 265 Nm @ 0-4600 rpm

Fuel & Ignition System /(Manufacturer and type) /Knock sensor /Oil Viscosity /Classification: N/A

For electric propulsion system information please see *Section 10 Description of Alternate fueled vehicles*. (Electric motor capacity, voltage, type and the size of electric motor and the battery capacity, voltage, and type of battery technology.)

Section 05.02.01**Engine Code Summary****EV / BEV / ZEV**

Test Group TVVXV00.0ZVA			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
ER_1	E400V12	N/A	EX40 Twin
ER_2	E400V12		EC40 Twin
EY_1	E400V19		EX40 Twin Performance Pack
EY_2	E400V19		EC40 Twin Performance Pack

Test Group TVVXV00.0ZVB			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
EH_1	E400V8	N/A	EX40
EH_2	E400V8		EC40

Test Group TVVXV00.0ZVC			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
EK_1	E400V14	N/A	EX30 Twin Performance
EK_2	E400V14		EX30 Cross Country

Test Group TVVXV00.0ZVD			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
EL_1	N/A	N/A	EX30 Single Motor extended range

Test Group TVVXT00.0ZVG			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
DA_1	E800V32	N/A	EX90 Twin Motor Performance
DB_1	E800V33		EX90 Twin Motor

Test Group TVVXT00.0ZPG			
Code	Designation	Type	Models
DA_2	E800V32	N/A	Polestar 3 Long Range Dual Motor Performance Pack
DE_1	E800V36		Polestar 3 Long Range Dual Motor

Test Group TVVXT00.0ZVH			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
DD_1	E800V34	N/A	EX90

Test Group TVVXT00.0ZPH			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
DD_2	E800V34	N/A	Polestar 3 Long Range Single Motor

Section 05.02.02**Engine Code Summary****PHEV / mHEV**

Test Group TVVXT02.0P30			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
H6_1	B4204TH	S8	XC90 T8 AWD
H6_2			XC60 T8 AWD
Test Group TVVXT02.0S31			
Code	Designation	Type	Models
M1_1	B4204T	S8	XC90 B5 AWD
M1_2			XC60 B5 AWD
Test Group TVVXJ02.0U70			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
L1_1	B4204T	S8	XC40 B5 AWD
L1_5			S90 B5
K9_1			XC40 B4
L1_4			V60CC B5 AWD
Test Group TVVXT02.0S30			
Engine Code	Engine Designation	Transmission Type	Vehicle Models
06_1	B4204TE	S8	XC90 B6 AWD
06_3			V90CC B6 AWD

Section 06.**Test vehicle description**

For test vehicle description, please refer to section 12

Certification Summary Information Report

Manufacturer	Volvo Car USA, LLC	Manufacturer Code	VVX
Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--
Certificate Number	--	CARB Executive Order #	--
Certificate Issue Date	--	Certificate Revision Date	--
Certificate Effective Date	--	Conditional Certificate	--
CSI Revision #	--	CSI Submission/Revision Date	09/02/2025 07:23:12 PM
Model Year	2026		

Test Group Information

CSI Type	New	Running Change Reference Number	--
GHG Exempt Status	Not Exempt		

Drive Sources and Fuel(s)

Drive Source #1: Electric Motor

Fuel	Basic Fuel Metering System	Lean Burn Strategy Indicator
Electricity	--	No

Hybrid Indicator	No		
Multiple Fuel Storage	--	Rechargeable Energy Storage System Indicator	Yes
Multiple Fuel Combustion	--	Off-board Charge Capable Indicator	Yes
Fuel Cell Indicator	No	EPA Vehicle Class	LDT4
Federal Clean Fuel Vehicle	Yes	Federal Clean Fuel Vehicle Standard	ZEV
Federal Clean Fuel Vehicle ILEV	No	California Partial Zero Emissions Vehicle Indicator	Yes
Durability Group Name	TVVXEEVNNBEV	Durability Group Equivalency Factor	1.0
Reduced Fee Test Group	No	Certification Region Code(s)	FA, CA
Complies with HD GHG 2b/3 regulations?	No		
Introduction into Commerce Date	--	CAP2000 Conditional Certificate?	N/A
Independent Commercial Importer?	--	Alternative Fuel Converter Certificate?	--
SFTP Federal Composite Compliance Identifier	Not Applicable	SFTP Tier 2 Composite CO Option	No
SFTP LEV-III Composite Compliance Indicator	No		
OBD Compliance Type	CARB	OBD Demonstration Vehicle Test Group	TVVXT02.0P30
Test Group OBD Compliance Level	Full - no deficiencies	Number of Test Group OBD Deficiencies	0
OBD Deficiencies Comments	Battery Electric Vehicle - No OBD requirements		
Mfr Test Group Comments	Battery Electric Vehicle. 2026MY EX90 Twin Motor, EX90 Twin Motor (21 Inch Wheels),EX90 Twin Motor Performance, EX90 Twin Motor Performance (21 Inch Wheels)		
Mfr Exhaust / Evap Standards Comments	--		

Certification Summary Information Report

Test Group	TVVXT00.0ZVG			Evaporative/Refueling Family		--				
Models Covered by this Certificate										
Carline Manufacturer	Division	Carline	Certification Region Code(s)	Drive System	Trans - Type	- # of Gears	Trans - Lockup			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	296 - EX90 Twin Motor	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	297 - EX90 Twin Motor (21 inch Wheels)	Federal	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	295 - EX90 Twin Motor Performance (21 inch Wheels)	Federal	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	295 - EX90 Twin Motor Performance (21 inch Wheels)	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	296 - EX90 Twin Motor	Federal	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	294 - EX90 Twin Motor Performance	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	297 - EX90 Twin Motor (21 inch Wheels)	California + CAA Section 177 states	All Wheel Drive	Automatic	1	No			
Volvo Car USA, LLC	1 - Volvo Cars of North America, LLC	294 - EX90 Twin Motor Performance	Federal	All Wheel Drive	Automatic	1	No			

Engine Description										
Hybrid Type			--		Hybrid Description			--		
Engine Type			--		Mfr Engine Description			--		
Engine Block Arrangement			--		Mfr Engine Block Arrangement Description			--		
Camless Valvetrain Indicator			--		Oil Viscosity/Classification					
Number of Cylinders/Rotors			--		Mechanically Variable Compression Ratio Indicator			--		

After Treatment Device(s) (ATD)										
Mfr After Treatment Device (ATD) Comments										
--										
Direct Ozone Reduction (DOR) Device										
--										
Mfr Emission Control Device Comments										
--										

Official Test Numbers											
Test Group	Fuel	FTP	US06	SC03	Cold CO	Highway	EPA City Litmus Value	EPA City Litmus Threshold	EPA Highway Litmus Value	EPA Highway Litmus Threshold	CREE Weighting Factor
Electricity		--	--	--	--	--	--	--	--	--	--

Certification Summary Information Report

Test Group		TVVXT00.0ZVG		Evaporative/Refueling Family		--	
SFTP LEV-III Official Test Numbers							
Test Group Fuel		FTP		US06		SC03	
Electricity		--		--		--	
Official Charge Depleting Test Numbers							
Test Group Fuel		UDDS		Highway			
Electricity		--		--			
Electricity		--		--			
Hybrid Electric Vehicle And Fuel Cell Information							
Rechargable Energy Storage System		Battery(s)		Rechargable Energy Storage System, if Other		--	
Battery Type		Lithium Ion		Number of Battery Packs		1	
Total Voltage of Battery Packs		718		Battery Energy Capacity		147	
Battery Specific Energy		164		Battery Charger Type		On-Board	
Number of Capacitors		--		Capacitor Rating (In Farads)		--	
Mfr Capacitor Comments		--					
Hydraulic System Description		--					
Regenerative Braking Type		Electrical Regen Brake					
Regenerative Braking Source		Both		Driver Controlled Regenerative Braking		No	
Mfr Regenerative Braking Description		--					
Drive Motor(s)/Generator(s)		4					
Motor/Generator Type 1		AC Induction		Rated Motor/Generator Power		220	
Motor/Generator Type 2		PMSM		Rated Motor/Generator Power		280	
Motor/Generator Type 3		PMSM		Rated Motor/Generator Power		205	
Motor/Generator Type 4		AC Induction		Rated Motor/Generator Power		130	
Mfr Fuel Cell Description		--					
Fuel Cell On-Board H2 Storage Capacity (kg)		--		Usable H2 Fill Capacity (kg)		--	
Mfr Hybrid Electric/ Electric Vehicle Comments		Rear drive Motor PMSM = Permanent Magnet Synch Machine Front drive motor ACI					

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--						
Emission Data Vehicle Information									
Vehicle ID / Configuration	202625 / 0	Manufacturer Vehicle Configuration Number	0						
Original Test Group Name	TVVXT00.0ZVG	Original Evaporative/Refueling Family	--						
Original Test Vehicle Model Year	2026								
Vehicle Model									
Represented Test Vehicle Make	Volvo	Represented Test Vehicle Model	EX90 Twin Motor						
Leak Family Details									
Leak Family Identifier	--	Leak Family Name	--						
Drive Sources and Fuel System Details									
	<table border="1"> <thead> <tr> <th>Drive Source and Fuel#</th><th>Drive Source</th><th>Fuel</th></tr> </thead> <tbody> <tr> <td>1</td><td>Electric Motor</td><td>Electricity</td></tr> </tbody> </table>	Drive Source and Fuel#	Drive Source	Fuel	1	Electric Motor	Electricity		
Drive Source and Fuel#	Drive Source	Fuel							
1	Electric Motor	Electricity							
Hybrid Indicator	No								
Multiple Fuel Storage	--	Multiple Fuel Combustion	--						
Fuel Cell Indicator	No	Rechargeable Energy Storage System Indicator	Yes						
Rechargeable Energy Storage System	Battery(s)	Rechargeable Energy Storage System, if 'Other'	--						
Off-board charge Capable Indicator	Yes								
Odometer Correction -- Initial	0	Odometer Correction Factor	0.9866						
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles								
Odometer Correction Units	Kilometers								
Engine Code	DA_1	Rated Horsepower	670						
Displacement (liters)	0.001								
Air Aspiration Method	Naturally Aspirated	Air Aspiration Method, if 'Other'	N/A - BEV						
Number of Air Aspiration Devices	--	Air Aspiration Device Configuration	--						
Charge Air Cooler Type	N/A	Drive Mode While Testing	All Wheel Drive						
Shift Indicator Light Usage	Not equipped	Aged Emission Components	4,000 (mi)						
Curb Weight (lbs)	5987	Equivalent Test Weight (pounds)	6500						
GVWR (lbs)	7360	N/V Ratio	106.8						
Axle Ratio	9.28								
Transmission Type	Automatic	# of Transmission Gears	1						
Transmission Lockup	No	Creep Gear	No						

Certification Summary Information Report

Test Group		TVVXT00.0ZVG			Evaporative/Refueling Family		--	
Dynamometer Coefficients:								
Target Coefficients				Set Coefficients			EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients	
Coefficient Category	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	A (lbf)	B (lbf/mph)	C (lbf/mph**2)		
City/Highway/Evap	43.81	0.1404	0.02128	4.6	0.012	0.0208	13.9	
Cold CO	48.19	0.1544	0.02341	0	0	0	N/A	
US06	43.81	0.1404	0.02128	4.6	0.012	0.0208	N/A	
Emission Control Device Comments		Electric vehicle						
Manufacturer Test Vehicle Comments		Tested on 20 inch tire, covering 22 inch tire as worst case. For N/V ratio an average value is calculated. Average N/V 106.8 (Front 101.0 and Rear 112.7). Test is performed with performance SW, as worst.						

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--																
Test #	TVVX10092005	Test Procedure	77 - Multi-Cycle Test (MCT)																
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																
Test Date	07/02/2025	Fuel	Electricity																
Fuel Batch ID	El1	Fuel Calibration Number	1																
Vehicle Class	LDT4 (ALVW > 5750, LVW 0-3750, GVW > 6000)	DF Type	Mfr. Determined																
Verify Test Lab ID	Volvo Car Corporation																		
E10 Evaporative Test Measurement Method	--																		
Test Start Odometer Reading	4785	Odometer Units	K																
4WD Test Dyno	Yes	Diesel Adjustment Factor Usage	--																
State of Charge Delta	Yes																		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	Road Speed Fan Usage	Yes																
PHEV/EV Charge Depleting Test Information																			
Recharge Event Voltage	235	Recharge Event Energy (kiloWatt-hours)	116.465																
Charge Depleting Range (Calculated miles)	442.479	Charge Depleting Range (Actual miles)	442.479																
Charge Depleting Range Highway (Calculated miles)	404.856	Derived 5-Cycle Coefficient Model Year	--																
All Electric Range Unadjusted (miles)	--	Equivalent All Electric Range (miles)	442.479																
Number of Charge Depleting Bags/Phases Conducted	8	Transition Bag/Phase Number	--																
Charge Depleting Bag/Phase #1																			
<table><tr><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr><tr><td>Actual Distance Driven (miles)</td><td>7.458</td></tr><tr><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr><tr><td>Drive Trace Absolute Speed Change Rating</td><td>-1.39</td></tr><tr><td>Drive Trace Energy Economy Rating</td><td>-2.32</td></tr><tr><td>Drive Trace Inertia Work Ratio Rating</td><td>-2.24</td></tr><tr><td>Integrated DC KW-HRS</td><td>1.9051</td></tr><tr><td>Manufacturer Fuel Economy</td><td>25.544</td></tr></table>				Test Result/Emission Name	Unrounded Test Result	Actual Distance Driven (miles)	7.458	Carbon-Related Exhaust Emissions	0	Drive Trace Absolute Speed Change Rating	-1.39	Drive Trace Energy Economy Rating	-2.32	Drive Trace Inertia Work Ratio Rating	-2.24	Integrated DC KW-HRS	1.9051	Manufacturer Fuel Economy	25.544
Test Result/Emission Name	Unrounded Test Result																		
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Carbon-Related Exhaust Emissions	0																		
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Drive Trace Energy Economy Rating	-2.32																		
Drive Trace Inertia Work Ratio Rating	-2.24																		
Integrated DC KW-HRS	1.9051																		
Manufacturer Fuel Economy	25.544																		
Charge Depleting Bag/Phase #2																			

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--															
	<table><tr><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr><tr><td>Actual Distance Driven (miles)</td><td>10.258</td></tr><tr><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr><tr><td>Drive Trace Absolute Speed Change Rating</td><td>-1.56</td></tr><tr><td>Drive Trace Energy Economy Rating</td><td>-1.46</td></tr><tr><td>Drive Trace Inertia Work Ratio Rating</td><td>-1.91</td></tr><tr><td>Integrated DC KW-HRS</td><td>2.6321</td></tr><tr><td>Manufacturer Fuel Economy</td><td>25.659</td></tr></table>	Test Result/Emission Name	Unrounded Test Result	Actual Distance Driven (miles)	10.258	Carbon-Related Exhaust Emissions	0	Drive Trace Absolute Speed Change Rating	-1.56	Drive Trace Energy Economy Rating	-1.46	Drive Trace Inertia Work Ratio Rating	-1.91	Integrated DC KW-HRS	2.6321	Manufacturer Fuel Economy	25.659	
	Test Result/Emission Name	Unrounded Test Result																
	Actual Distance Driven (miles)	10.258																
	Carbon-Related Exhaust Emissions	0																
	Drive Trace Absolute Speed Change Rating	-1.56																
	Drive Trace Energy Economy Rating	-1.46																
	Drive Trace Inertia Work Ratio Rating	-1.91																
	Integrated DC KW-HRS	2.6321																
	Manufacturer Fuel Economy	25.659																
	Charge Depleting Bag/Phase #3																	
<table><tr><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr><tr><td>Actual Distance Driven (miles)</td><td>7.456</td></tr><tr><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr><tr><td>Drive Trace Absolute Speed Change Rating</td><td>-0.81</td></tr><tr><td>Drive Trace Energy Economy Rating</td><td>-1.26</td></tr><tr><td>Drive Trace Inertia Work Ratio Rating</td><td>-1.07</td></tr><tr><td>Integrated DC KW-HRS</td><td>1.7703</td></tr><tr><td>Manufacturer Fuel Economy</td><td>23.743</td></tr></table>	Test Result/Emission Name	Unrounded Test Result	Actual Distance Driven (miles)	7.456	Carbon-Related Exhaust Emissions	0	Drive Trace Absolute Speed Change Rating	-0.81	Drive Trace Energy Economy Rating	-1.26	Drive Trace Inertia Work Ratio Rating	-1.07	Integrated DC KW-HRS	1.7703	Manufacturer Fuel Economy	23.743		
Test Result/Emission Name	Unrounded Test Result																	
Actual Distance Driven (miles)	7.456																	
Carbon-Related Exhaust Emissions	0																	
Drive Trace Absolute Speed Change Rating	-0.81																	
Drive Trace Energy Economy Rating	-1.26																	
Drive Trace Inertia Work Ratio Rating	-1.07																	
Integrated DC KW-HRS	1.7703																	
Manufacturer Fuel Economy	23.743																	
Charge Depleting Bag/Phase #4																		
<table><tr><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr><tr><td>Actual Distance Driven (miles)</td><td>237.414</td></tr><tr><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr><tr><td>Drive Trace Absolute Speed Change Rating</td><td>0.01</td></tr><tr><td>Drive Trace Energy Economy Rating</td><td>1.11</td></tr><tr><td>Drive Trace Inertia Work Ratio Rating</td><td>0.01</td></tr><tr><td>Integrated DC KW-HRS</td><td>76.2818</td></tr><tr><td>Manufacturer Fuel Economy</td><td>32.13</td></tr></table>	Test Result/Emission Name	Unrounded Test Result	Actual Distance Driven (miles)	237.414	Carbon-Related Exhaust Emissions	0	Drive Trace Absolute Speed Change Rating	0.01	Drive Trace Energy Economy Rating	1.11	Drive Trace Inertia Work Ratio Rating	0.01	Integrated DC KW-HRS	76.2818	Manufacturer Fuel Economy	32.13		
Test Result/Emission Name	Unrounded Test Result																	
Actual Distance Driven (miles)	237.414																	
Carbon-Related Exhaust Emissions	0																	
Drive Trace Absolute Speed Change Rating	0.01																	
Drive Trace Energy Economy Rating	1.11																	
Drive Trace Inertia Work Ratio Rating	0.01																	
Integrated DC KW-HRS	76.2818																	
Manufacturer Fuel Economy	32.13																	
Charge Depleting Bag/Phase #5																		
<table><tr><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr><tr><td>Actual Distance Driven (miles)</td><td>7.44</td></tr><tr><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr><tr><td>Drive Trace Absolute Speed Change Rating</td><td>-2.99</td></tr><tr><td>Drive Trace Energy Economy Rating</td><td>-2.37</td></tr><tr><td>Drive Trace Inertia Work Ratio Rating</td><td>-4.86</td></tr><tr><td>Integrated DC KW-HRS</td><td>1.7116</td></tr><tr><td>Manufacturer Fuel Economy</td><td>23.005</td></tr></table>	Test Result/Emission Name	Unrounded Test Result	Actual Distance Driven (miles)	7.44	Carbon-Related Exhaust Emissions	0	Drive Trace Absolute Speed Change Rating	-2.99	Drive Trace Energy Economy Rating	-2.37	Drive Trace Inertia Work Ratio Rating	-4.86	Integrated DC KW-HRS	1.7116	Manufacturer Fuel Economy	23.005		
Test Result/Emission Name	Unrounded Test Result																	
Actual Distance Driven (miles)	7.44																	
Carbon-Related Exhaust Emissions	0																	
Drive Trace Absolute Speed Change Rating	-2.99																	
Drive Trace Energy Economy Rating	-2.37																	
Drive Trace Inertia Work Ratio Rating	-4.86																	
Integrated DC KW-HRS	1.7116																	
Manufacturer Fuel Economy	23.005																	
Charge Depleting Bag/Phase #6																		

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--
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Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	10.239
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-4.42
Drive Trace Energy Economy Rating	-1.43
Drive Trace Inertia Work Ratio Rating	-5.39
Integrated DC KW-HRS	2.5914
Manufacturer Fuel Economy	25.309

Charge Depleting Bag/Phase #7

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	7.471
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	-2.23
Drive Trace Energy Economy Rating	-3.23
Drive Trace Inertia Work Ratio Rating	-3.27
Integrated DC KW-HRS	1.7241
Manufacturer Fuel Economy	23.077

Charge Depleting Bag/Phase #8

Test Result/Emission Name	Unrounded Test Result
Actual Distance Driven (miles)	45.696
Carbon-Related Exhaust Emissions	0
Drive Trace Absolute Speed Change Rating	0.01
Drive Trace Energy Economy Rating	-0.68
Drive Trace Inertia Work Ratio Rating	0.01
Integrated DC KW-HRS	14.5574
Manufacturer Fuel Economy	31.857

Manufacturer Test Comments

Multi cycle test method used. EX90 Twin Motor tested with performance software, ETW 6500

Certification Summary Information Report

Test Group		TVVXT00.0ZVG				Evaporative/Refueling Family				--		
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--					
Emission Data Vehicle Information								
Vehicle ID / Configuration	202625 / 1	Manufacturer Vehicle Configuration Number	1					
Original Test Group Name	TVVXT00.0ZVG	Original Evaporative/Refueling Family	--					
Original Test Vehicle Model Year	2026							
Vehicle Model								
Represented Test Vehicle Make	Volvo	Represented Test Vehicle Model	EX90 Twin Motor					
Leak Family Details								
Leak Family Identifier	--	Leak Family Name	--					
Drive Sources and Fuel System Details								
	<table border="1"> <thead> <tr> <th>Drive Source and Fuel#</th> <th>Drive Source</th> <th>Fuel</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Electric Motor</td> <td>Electricity</td> </tr> </tbody> </table>	Drive Source and Fuel#	Drive Source	Fuel	1	Electric Motor	Electricity	
Drive Source and Fuel#	Drive Source	Fuel						
1	Electric Motor	Electricity						
Hybrid Indicator	No							
Multiple Fuel Storage	--	Multiple Fuel Combustion	--					
Fuel Cell Indicator	No	Rechargeable Energy Storage System Indicator	Yes					
Rechargeable Energy Storage System	Battery(s)	Rechargeable Energy Storage System, if 'Other'	--					
Off-board charge Capable Indicator	Yes							
Odometer Correction -- Initial	0	Odometer Correction Factor	0.9866					
Odometer Correction Sign	+ = System Miles is equal to (Test odometer reading * Correction factor) + Initial system miles							
Odometer Correction Units	Kilometers							
Engine Code	DA_1	Rated Horsepower	670					
Displacement (liters)	0.001							
Air Aspiration Method	Naturally Aspirated	Air Aspiration Method, if 'Other'	N/A - BEV					
Number of Air Aspiration Devices	--	Air Aspiration Device Configuration	--					
Charge Air Cooler Type	N/A	Drive Mode While Testing	All Wheel Drive					
Shift Indicator Light Usage	Not equipped	Aged Emission Components	4,000 (mi)					
Curb Weight (lbs)	5987	Equivalent Test Weight (pounds)	6500					
GVWR (lbs)	7360	N/V Ratio	106					
Axle Ratio	9.28							
Transmission Type	Automatic	# of Transmission Gears	1					
Transmission Lockup	No	Creep Gear	No					

Certification Summary Information Report

Test Group		TVVXT00.0ZVG			Evaporative/Refueling Family		--
Dynamometer Coefficients:							
Target Coefficients				Set Coefficients			EPA Calculated Total Road Load Horse Power for City/Highway/Evap Coefficients
Coefficient Category	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	A (lbf)	B (lbf/mph)	C (lbf/mph**2)	
City/Highway/Evap	38.4	0.1404	0.02128	-0.6	0.041	0.0206	13.1
Cold CO	42.24	0.1544	0.02341	0	0	0	N/A
US06	38.4	0.1404	0.02128	-0.6	0.041	0.0206	N/A
Emission Control Device Comments		Electric vehicle					
Manufacturer Test Vehicle Comments		Tested on 21 inch tire. For N/V ratio an average value is calculated. Average N/V 106.0 (Front 100.0 and Rear 112.0). Test is performed with performance SW, as worst.					

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--																
Test #	TVVX10092006	Test Procedure	77 - Multi-Cycle Test (MCT)																
Exhaust Test # for this Evap Test	--	Test Fuel Type	62 - Electricity																
Test Date	06/28/2025	Fuel	Electricity																
Fuel Batch ID	El1	Fuel Calibration Number	1																
Vehicle Class	LDT4 (ALVW > 5750, LVW 0-3750, GVW > 6000)	DF Type	Mfr. Determined																
Verify Test Lab ID	Volvo Car Corporation																		
E10 Evaporative Test Measurement Method	--																		
Test Start Odometer Reading	3785	Odometer Units	K																
4WD Test Dyno	Yes	Diesel Adjustment Factor Usage	--																
State of Charge Delta	Yes																		
Drive Cycle Speed Tolerance Criteria	Used Part 1066 (+/- 2.0 mph, +/- 1.0 sec)	Road Speed Fan Usage	Yes																
PHEV/EV Charge Depleting Test Information																			
Recharge Event Voltage	235	Recharge Event Energy (kiloWatt-hours)	116.672																
Charge Depleting Range (Calculated miles)	454.472	Charge Depleting Range (Actual miles)	454.472																
Charge Depleting Range Highway (Calculated miles)	413.369	Derived 5-Cycle Coefficient Model Year	--																
All Electric Range Unadjusted (miles)	--	Equivalent All Electric Range (miles)	454.472																
Number of Charge Depleting Bags/Phases Conducted	8	Transition Bag/Phase Number	--																
Charge Depleting Bag/Phase #1																			
<table><tr><th>Test Result/Emission Name</th><th>Unrounded Test Result</th></tr><tr><td>Actual Distance Driven (miles)</td><td>7.455</td></tr><tr><td>Carbon-Related Exhaust Emissions</td><td>0</td></tr><tr><td>Drive Trace Absolute Speed Change Rating</td><td>-1.98</td></tr><tr><td>Drive Trace Energy Economy Rating</td><td>-2.53</td></tr><tr><td>Drive Trace Inertia Work Ratio Rating</td><td>-3.05</td></tr><tr><td>Integrated DC KW-HRS</td><td>1.8171</td></tr><tr><td>Manufacturer Fuel Economy</td><td>24.374</td></tr></table>				Test Result/Emission Name	Unrounded Test Result	Actual Distance Driven (miles)	7.455	Carbon-Related Exhaust Emissions	0	Drive Trace Absolute Speed Change Rating	-1.98	Drive Trace Energy Economy Rating	-2.53	Drive Trace Inertia Work Ratio Rating	-3.05	Integrated DC KW-HRS	1.8171	Manufacturer Fuel Economy	24.374
Test Result/Emission Name	Unrounded Test Result																		
Actual Distance Driven (miles)	7.455																		
Carbon-Related Exhaust Emissions	0																		
Drive Trace Absolute Speed Change Rating	-1.98																		
Drive Trace Energy Economy Rating	-2.53																		
Drive Trace Inertia Work Ratio Rating	-3.05																		
Integrated DC KW-HRS	1.8171																		
Manufacturer Fuel Economy	24.374																		
Charge Depleting Bag/Phase #2																			

Charge Depleting Bag/Phase #3

Charge Depleting Bag/Phase #4

Charge Depleting Bag/Phase #5

Charge Depleting Bag/Phase #6

Certification Summary Information Report

Test Group	TVVXT00.0ZVG	Evaporative/Refueling Family	--
Test Result/Emission Name		Unrounded Test Result	
Actual Distance Driven (miles)		10.248	
Carbon-Related Exhaust Emissions		0	
Drive Trace Absolute Speed Change Rating		-1.57	
Drive Trace Energy Economy Rating		-1.67	
Drive Trace Inertia Work Ratio Rating		-1.72	
Integrated DC KW-HRS		2.5454	
Manufacturer Fuel Economy		24.838	
Charge Depleting Bag/Phase #7			
Test Result/Emission Name		Unrounded Test Result	
Actual Distance Driven (miles)		7.471	
Carbon-Related Exhaust Emissions		0	
Drive Trace Absolute Speed Change Rating		-0.77	
Drive Trace Energy Economy Rating		-2.08	
Drive Trace Inertia Work Ratio Rating		-1.14	
Integrated DC KW-HRS		1.6828	
Manufacturer Fuel Economy		22.524	
Charge Depleting Bag/Phase #8			
Test Result/Emission Name		Unrounded Test Result	
Actual Distance Driven (miles)		38.82	
Carbon-Related Exhaust Emissions		0	
Drive Trace Absolute Speed Change Rating		0.01	
Drive Trace Energy Economy Rating		-0.88	
Drive Trace Inertia Work Ratio Rating		0.01	
Integrated DC KW-HRS		12.1299	
Manufacturer Fuel Economy		31.247	
Manufacturer Test Comments			
Multi cycle test method used. EX90 Twin Motor 21 Inch Wheel tested with performance software, ETW 6500			

Test Group		TVVXT00.0ZVG				Evaporative/Refueling Family				--		
Certification Region	Useful Life	Standard Level	Emission Name	Rounded Result	RAF	NMOG/NM HC Ratio	Diesel Adjustment Factor	Add DF	Mult DF	Certification Level	Standard	Pass/Fail
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
Fed	120,000 miles	Federal Tier 3 Bin 0	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
CA	120,000 miles	California ZEV	CREE	0	--	--	--	0	--	0	--	--
Fuel Properties												
Fuel Batch ID			E11			Fuel Calibration Number			1			
Test Fuel Type			62 - Electricity			Fuel Batch Calibration Date			05/01/2020			
Fuel Batch Calibration Effective Date			05/01/2020			Fuel Batch Calibration Ineffective Date			--			
Carbon Weight Fraction NMHC			--			Carbon Weight Fraction HC			--			
Exhaust Carbon Weight Fraction			--			Fuel Methanol Volume Fraction			--			
Fuel Density (grams/cubic ft)			--			Fuel Specific Gravity			--			
Fuel Ethanol Volume Percent (%)			--			Fuel Net Heating Value / Fuel Net Heat of Combustion (E0) (BTU/lb)			--			
Fuel Net Heat of Combustion (E10) (MJ/kg)			--			Fuel Carbon Mass Fraction (E10)			--			
Fuel Blend Carbon Weight Fraction / Fuel Carbon Mass Fraction (E0)			--			Weight Fraction CO2			--			

Certification Summary Information Report

Test Group		TVVXT00.0ZVG			Evaporative/Refueling Family			--	
Consolidated List of Standards									
Exhaust Standards									
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Both	
Vehicle Class		LDT4 (ALVW > 5750, LVW 0-3750, GVW > 6000)			Standard Level			California ZEV	
Fuel		Electricity			Test Procedure			Multi-Cycle Test (MCT)	
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	--	0	0
150,000 miles	CO	--	--	--	--	--	--	0	0
Cert Region		California + CAA Section 177 states			Cert/In-Use Code			Cert	
Vehicle Class		LDT4 (ALVW > 5750, LVW 0-3750, GVW > 6000)			Standard Level			California ZEV	
Fuel		Electricity			Test Procedure			CVS 75 and later (w/o can. load)	
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles	CO	--	--	--	--	--	--	0	0
Cert Region		Federal			Cert/In-Use Code			Both	
Vehicle Class		LDT4 (ALVW > 5750, LVW 0-3750, GVW > 6000)			Standard Level			Federal Tier 3 Bin 0	
Fuel		Electricity			Test Procedure			Multi-Cycle Test (MCT)	
Useful Life	Emission Name	Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
120,000 miles	CREE	--	--	--	--	--	--	0	0
150,000 miles	CO	--	--	--	--	--	--	0	0

Certification Summary Information Report

Test Group		TVVXT00.0ZVG			Evaporative/Refueling Family			--			
Cert Region		Federal			Cert/In-Use Code			Cert			
Vehicle Class		LDT4 (ALVW > 5750, LVW 0-3750, GVW > 6000)			Standard Level			Federal Tier 3 Bin 0			
Fuel		Electricity			Test Procedure			CVS 75 and later (w/o can. load)			
Useful Life		Emission Name		Rounded Result	RAF	NMOG / NMHC	Upward Diesel Adjustment Factor	Downward Diesel Adjustment Factor	Mult DF	Add DF	Std
150,000 miles		CO		--	--	--	--	--	--	0	0

Certification Summary Information Report

Test Group		TVVXT00.0ZVG	Evaporative/Refueling Family		--
Glossary					
Useful Life					
4	4,000 miles		120	120,000 miles	
50	50,000 miles		150	150,000 miles	
100	100,000 miles				
Emission Name					
HC-TOTAL	Total Hydrocarbon		AS-VOLT	Average System Voltage	
CO	Carbon Monoxide		CO2 BAG 1	Bag 1 Carbon Dioxide	
CO2	Carbon dioxide		CO2 BAG 2	Bag 2 Carbon Dioxide	
CREE	Carbon-Related Exhaust Emissions		CO2 BAG 3	Bag 3 Carbon Dioxide	
OPT-CREE	Optional Carbon-Related Exhaust Emissions		CO2 BAG 4	Bag 4 Carbon Dioxide	
NOX	Nitrogen Oxide		NMOG+NOX	Non-methane organic gases plus Nitrogen Oxides	
PM	Particulate Matter		NMOG+NOX-COMP	SFTP Composite Non-methane Organic Gases + Nitrogen Oxides	
PM-COMP	SFTP Composite Particulate Matter		DT-IWRR	Drive Trace Inertia Work Ratio Rating	
HC-NM	Non-methane Hydrocarbon		DT-ASCR	Drive Trace Absolute Speed Change Rating	
OMHCE	Organic material Hydrocarbon Equivalent		DT-EER	Drive Trace Energy Economy Rating	
OMNMHCE	Organic material non-methane HC equivalent		COMB-CREE	Combined Carbon-Related Exhaust Emissions	
NMOG	Non-methane organic gases		COMB-OPT-CREE	Combined Optional Carbon-Related Exhaust Emissions	
HCHO	Formaldehyde		HC-TOTAL-EQUIV	Total Hydrocarbon equivalent - Evap only	
H3C2HO	Acetaldehyde		METHANE-COMB	Combined CH4 for HD 2b/3 vehicles only	
HC-NM+NOX	SFTP Non-methane Hydrocarbon + Nitrogen Oxides for US06 or SC03		N2O-COMB	Combined Nitrous Oxide for HD 2b/3 vehicles only	
HC-NM+NOX-COMP	SFTP Composite Non-methane Hydrocarbon + Nitrogen Oxides		LEAK-DIA	Effective Leak Diameter (inches)	
CO-COMP	SFTP Composite Carbon Monoxide		LEAK-GAS CAP	Gas Cap Leakage (cc/min)	
ETHANOL	C2H5OH - Ethanol		CO2-COMB	Combined Carbon Dioxide for HD 2b/3 Vehicles Only	
FE BAG 1	Bag 1 Fuel Economy		KW-HRS	Integrated DC KW-HRS	
FE BAG 2	Bag 2 Fuel Economy		CH4 BAG 1	Bag 1 Methane	
FE BAG 3	Bag 3 Fuel Economy		CH4 BAG 2	Bag 2 Methane	
FE BAG 4	Bag 4 Fuel Economy		CH4 BAG 3	Bag 3 Methane	
MFR FE	Manufacturer Fuel Economy		CH4 BAG 4	Bag 4 Methane	
HC	Hydrocarbon for Running Loss and ORVR		CO BAG 1	Bag 1 Carbon Monoxide	
METHANE	CH4 - Methane		CO BAG 2	Bag 2 Carbon Monoxide	
METHANOL	CH3OH - Methanol		CO BAG 3	Bag 3 Carbon Monoxide	
N2O	Nitrous Oxide		CO BAG 4	Bag 4 Carbon Monoxide	
SPITBACK	Spitback Hydrocarbon in grams		NMOG BAG 1	Bag 1 Non-methane organic gases	
AMP-HRS	Integrated Amp-hours		NMOG BAG 2	Bag 2 Non-methane organic gases	
START-SOC	System Start State of Charge Watt-hours		NMOG BAG 3	Bag 3 Non-methane organic gases	
END-SOC	System End State of Charge Watt-hours		NMOG BAG 4	Bag 4 Non-methane organic gases	
ACT-DISTANCE	Actual Distance Driven (miles)				
Certification Region					

Certification Summary Information Report

Test Group		TVVXT00.0ZVG		Evaporative/Refueling Family		--	
CA	California + CAA Section 177 states	FA	Federal				
Exhaust Emission Standard Level							
B1	Federal Tier 2 Bin 1	T3B160	Federal Tier 3 Bin 160				
B2	Federal Tier 2 Bin 2	T3B125	Federal Tier 3 Bin 125				
B3	Federal Tier 2 Bin 3	T3B110	Federal Tier 3 Transitional Bin 110				
B4	Federal Tier 2 Bin 4	T3B85	Federal Tier 3 Transitional Bin 85				
B5	Federal Tier 2 Bin 5	T3SULEV30	Federal Tier 3 Transitional LEV-II SULEV30 Carryover				
B6	Federal Tier 2 Bin 6	T3B70	Federal Tier 3 Bin 70				
B7	Federal Tier 2 Bin 7	T3B50	Federal Tier 3 Bin 50				
B8	Federal Tier 2 Bin 8	T3B30	Federal Tier 3 Bin 30				
B9	Federal Tier 2 Bin 9	T3B20	Federal Tier 3 Bin 20				
B10	Federal Tier 2 Bin 10	T3B0	Federal Tier 3 Bin 0				
B11	Federal Tier 2 Bin 11	HDV2B395	Federal Tier 3 HD Class 2b Transitional Bin 395				
HDV1	HDV1 (Federal HD chassis Class 2b GVW 8501-10000)	HDV2B340	Federal Tier 3 HD Class 2b Transitional Bin 340				
HDV2	HDV2 (Federal HD chassis Class 3 GVW 10001-14000)	HDV2B250	Federal Tier 3 HD Class 2b Bin 250				
L2	California LEV-II LEV	HDV2B200	Federal Tier 3 HD Class 2b Bin 200				
L2OP	California LEV-II LEV Optional	HDV2B170	Federal Tier 3 HD Class 2b Bin 170				
U2	California LEV-II ULEV	HDV2B150	Federal Tier 3 HD Class 2b Bin 150				
S2	California LEV-II SULEV	HDV2B0	Federal Tier 3 HD Class 2b Bin 0				
ZEV	California ZEV	HDV3B630	Federal Tier 3 HD Class 3 Transitional Bin 630				
OT	Other	HDV3B570	Federal Tier 3 HD Class 3 Transitional Bin 570				
T1	Federal Tier 1	HDV3B400	Federal Tier 3 HD Class 3 Bin 400				
PZEV	California PZEV	HDV3B270	Federal Tier 3 HD Class 3 Bin 270				
L2LEV160	California LEV-II LEV160	HDV3B230	Federal Tier 3 HD Class 3 Bin 230				
L2ULEV125	California LEV-II ULEV125	HDV3B200	Federal Tier 3 HD Class 3 Bin 200				
L2SULEV30	California LEV-II SULEV30	HDV3B0	Federal Tier 3 HD Class 3 Bin 0				
L2LEV395	California LEV-II LEV395	L4SULEV100	California LEV-IV SULEV100				
L2ULEV340	California LEV-II ULEV340	L4SULEV125	California LEV-IV SULEV125				
L2LEV630	California LEV-II LEV630	L4SULEV15	California LEV-IV SULEV15				
L2ULEV570	California LEV-II ULEV570	L4SULEV150	California LEV-IV SULEV150				
L3LEV160	California LEV-III LEV160	L4SULEV170	California LEV-IV SULEV170				
L3ULEV125	California LEV-III ULEV125	L4SULEV175	California LEV-IV SULEV175				
L3ULEV70	California LEV-III ULEV70	L4SULEV20	California LEV-IV SULEV20				
L3ULEV50	California LEV-III ULEV50	L4SULEV200	California LEV-IV SULEV200				
L3SULEV30	California LEV-III SULEV30	L4SULEV230	California LEV-IV SULEV230				
L3SULEV20	California LEV-III SULEV20	L4SULEV25	California LEV-IV SULEV25				
L3LEV395	California LEV-III LEV395	L4SULEV30	California LEV-IV SULEV30				
L3ULEV340	California LEV-III ULEV340	L4SULEV75	California LEV-IV SULEV75				
L3ULEV250	California LEV-III ULEV250	L4SULEV85	California LEV-IV SULEV85				
L3ULEV200	California LEV-III ULEV200	L4ULEV125	California LEV-IV ULEV125				

Certification Summary Information Report

Test Group		TVVXT00.0ZVG	Evaporative/Refueling Family		--
L3SULEV170	California LEV-III SULEV170		L4ULEV200	California LEV-IV ULEV200	
L3SULEV150	California LEV-III SULEV150		L4ULEV250	California LEV-IV ULEV250	
L3LEV630	California LEV-III LEV630		L4ULEV270	California LEV-IV ULEV270	
L3ULEV570	California LEV-III ULEV570		L4ULEV40	California LEV-IV ULEV40	
L3ULEV400	California LEV-III ULEV400		L4ULEV400	California LEV-IV ULEV400	
L3ULEV270	California LEV-III ULEV270		L4ULEV50	California LEV-IV ULEV50	
L3SULEV230	California LEV-III SULEV230		L4ULEV60	California LEV-IV ULEV60	
L3SULEV200	California LEV-III SULEV200		L4ULEV70	California LEV-IV ULEV70	
Transmission Type Code					
AMS	Automated Manual- Selectable (e.g. Automated Manual with paddles)	M	Manual		
A	Automatic	OT	Other		
AM	Automated Manual	SA	Semi-Automatic		
CVT	Continuously Variable	SCV	Selectable Continuously Variable (e.g. CVT with paddles)		
Drive System Code					
4	4-Wheel Drive	P	Part-time 4-Wheel Drive		
F	2-Wheel Drive, Front	A	All Wheel Drive		
R	2-Wheel Drive, Rear				
Additional Terms and Acronyms					
AFC	Alternative Fuel Converter	ICI	Independent Commercial Importer		
CSI	Certificate Summary Information	ORVR	Onboard Refueling Vapor Recovery		
DF	Deterioration Factor	SIL	Shift Indicator Light		
Evap	Evaporation, Evaporative	Trans	Transmission		

Test Group: TVVXT00.0ZVG											
Vehicle ID: 202625 Vehicle Model: EX90 Twin Motor											
Date	Test No. VCC	Test No. Verify	Odo Reading km	System Mileage km	Odometer Correction Factor	Recharge energy (AC/Whr)	kWh/100 miles UDDS	kWh/100 miles HWY	All Electric Range UDDS (miles)	All Electric Range HWY (miles)	Test Comments
07 02 2025	E1_250702_007	TVVX10092005	4785	4721	0.9866	116465	26.32	28.77	442.48	404.86	V00 MCT EX90 Twin Motor Performance Covers for EX90 Twin Motor
06 28 2025	E1_250628_000	TVVX10092006	3785	3734	0.9866	116672	25.67	28.22	454.47	413.37	V01 MCT EX90 Twin Motor Performance (21 Inch Wheels) Covers for EX90 Twin Motor (21 Inch Wheels)

Section 10.01

DESCRIPTION OF ALTERNATE-FUELED VEHICLES

For 2026MY, Volvo does offer alternate fueled vehicle in the Test Group **TVVXT00.0ZVG** (Electric Vehicle / BEV / ZEV) using:

Front drive unit

Drive motor type: ACI (AC Induction)

For maximum Power and Torque, please see section 05.01 "Test Group Description"

Single-speed transmission

Rear drive unit

Drive motor type: PMSM (Permanent Magnet Synchronous Machine)

For maximum Power and Torque, please see section 05.01 "Test Group Description"

Single-speed transmission

High voltage battery

NMC battery pack

Anode: Graphite

Cathode: NMC

106 kWh pack nominal energy capacity

103 kWh pack useable energy capacity

718 Volt (Nominal Voltage)

Battery Duty Cycle Usage: 97%-0%

Battery Manufacturer: Volvo (Battery Cells and modules by CATL)

147 Ah Three hour discharge rate (C/3) energy capacity

- C/3 Rate (A): 49A

- C/3 Temperature (Celsius): battery temperature at start of test: 25 deg C

- C/3 Battery Capacity Measurement (AH) Test1: 148,35 Ah

- C/3 Battery Capacity Measurement (AH) Test2: 148,41 Ah

- C/3 Battery Capacity Measurement (AH) Test3: 148,40 Ah

High Voltage Battery Charging:

Please see section 10.13 "Charging system Description".

Regenerative braking system

The vehicle can also generate current to the high voltage batteries using kinetic energy.

By lightly pressing the brake pedal the vehicle's kinetic energy is converted to electric energy which is used to charge the high voltage battery.

Charging a fully electric car

Starting charging

Important

Avoid plugging the charging cable in when there is risk of thunderstorms or lightning strikes.

Make sure the car is in park (P).

1. Connect the charging cable to the charging source. Some stations have a permanently attached charging cable that you connect to your car.
2. Open the charging lid by lightly pressing on its rearmost end.
3. Remove any protective covers from the charging port and cable connector.
4. Connect the cable to the vehicle.
 - When the cable is fully inserted it locks into place. Charging starts within a few seconds and once started, the charging input socket/charging port¹ light pulsates green.

Stopping charging

You can stop the charging process at any time.

Important

Always stop the charging session before attempting to unplug the charging cable from the car. If you don't, you may cause damage to the cable or the system.

1. Stop the charging cycle by pressing the release button next to the charging input socket/charging port.
 - The charging is stopped, and the charging cable unlocks from the charging input socket/charging port.
2. Unplug the charging cable from the vehicle.
3. Reattach the protective cover on the cable connector.
4. Reattach the charging port's protective cover and close the charging lid.

Charging port LED signals for EX90

Signals	Description
White, solid	Charging port location light. The charging cable is attached and unlocked.
White, pulsating	The charging cable is attached and the charging process is either initiating or waiting to start.
Green, pulsating	Charging is in progress.
Blue	Charging is scheduled.
White, pulsating fast	The status is visible while charging is being stopped.
Green	Charging is complete.
Red	Charging fault. Check the displays for additional information. Always make sure that the charging cable is correctly connected to the car's charging port and that the power source, such as the cable or the charging station, works correctly. If an error is indicated, try to disconnect the cable from the car, then reconnect it and re-initiate charging to see if the problem is solved. If the problem persists, contact an authorized Volvo workshop.
Red, pulsating	The status is visible if you have tried to unlock the charging cable without being authorized. Unlock the car and try again.

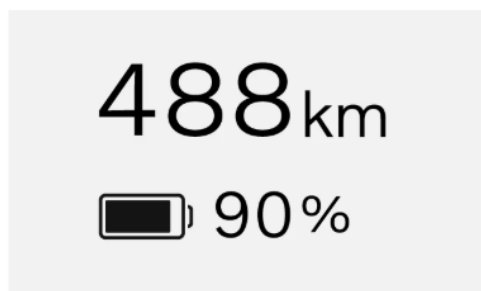
Image of the charger inlet



Method for determining battery state of charge (Battery Meter)

The battery meter shows the charge level percentage and estimated range of your vehicle.

Updated 04/25/2024



The battery meter is shown in the instrument panel at all times.

Remaining battery

The battery percentage indicates the level of charge left in your vehicle's battery.

The range tells you how far you can drive with the battery's current charge level. The estimated range is based on your historical driving patterns.

S 10.05 Instructions provided to vehicle owner for proper and safe operation

Test Groups: TVVXT00.0ZVG & TVVXT00.0ZVH

Charging types

Learn more about the different types of charging for your vehicle and how to initiate charging for each type.

Updated 04/09/2025



Warning

Charging components and high voltage

- The vehicle's charging components carry hazardous currents and voltages. They must be handled with care. Do not perform actions that are not clearly described in the user manual.
- Do not modify or make your own repairs to any charging components. Contact an authorized Volvo workshop for any required repairs or servicing.
- Installation and repairs of at-home charging equipment^[1] must be performed by a licensed electrician.
- Damage to the vehicle's high voltage components, including the traction battery, can cause overheating, fire and serious personal injury. If there is a risk of damage, such as after battery leakage, flooding, fire or a collision, do not use the vehicle. Contact an authorized Volvo workshop as soon as possible. If possible, leave the vehicle outdoors and away from people, buildings, property and other objects that could catch or spread fire.

If you have a pacemaker or similar device

Charging may affect the operation of your pacemaker. Anyone with an implanted pacemaker or biventricular pacing pulse generator without defibrillation capability should not attempt to charge the vehicle on their own. Ask someone else to charge your vehicle. You should also stay away from the chargers and charging cables while charging the vehicle.

**Note****12 V battery charging**

The vehicle keeps the 12 V battery charged as long as the high voltage battery has sufficient charge.

Condensation during charging

During charging, condensation from the cooling system can collect under the vehicle. This is perfectly normal and is caused by the traction battery cooling down.

AC charging at a charging station or from a charging point at home

AC charging points are available at a variety of charging locations, both public and private. An AC charging point can be installed at home and is the recommended source for regular charging.

AC charging with household outlet

You can charge your vehicle from a regular household outlet. This type of charging is only suitable for occasional charging and is not recommended for regular use. If you are planning to charge your vehicle from a household outlet, there are additional steps you need to take to ensure it is done safely.

**Warning**

Do not use visibly worn or damaged electrical sockets as they could cause overheating, electric shock or personal injury.

 Important

- The vehicle must only be charged from approved, grounded household outlets.
- Do not exceed the maximum permitted charging current when charging via a regular household outlet. Limits imposed by local and national charging recommendations may apply.
- Ensure that the household outlet breaker can handle the charging cable's specified current before you start charging. If you are uncertain, the outlet must be checked by a qualified and licensed electrician.
- Never connect the charging cable when there is a risk of thunderstorm or lightning strike.

DC fast charging

DC fast charging is available at certain charging stations. These charging stations deliver very high power that allows for shorter charging times.

 Note

Charging stations with support for fast charging are usually clearly marked CCS or Combo.

Charging cables

There are different charging cables to use when you charge your vehicle. Mode 3 cables are the standard cable to use when charging electric vehicles. There are different versions of the mode 2 cable available. Mode 2 cables can be used as an emergency solution, but it is not recommended to use them as a daily charging method.

^[1] Including any work on the electric meter housing or power distribution service panel.

S10.06 - Instructions provided to vehicle owners on how to access, in vehicle, the battery state of health (SOH) parameter.

S10.07 - Instructions provided to vehicle owners on how to access, in vehicle, distance traveled since battery state of health last reset.

S10.08 - Instructions provided to vehicle owners on how to access, in vehicle, actual rate of charge occurring.

S10.09 - Instructions provided to vehicle owners on how to access, in vehicle, maximum charge rate vehicle can currently accept.

Battery status and health

You can find your car's traction battery status and health in the centre display.

To open the car status view, press the car symbol  in the bottom bar and go to **Status** and then **Battery status**.

Press the information symbol or downward arrow to find more information for each area:

Charging power Current estimation of your car's charging power as well as the battery's preconditioning status. You can press the information symbol for more details on the actual charging power and the actual charging limit. If the car is not plugged in the values will be 0.

Battery health Battery state of health is a measure of how much energy can be stored in the battery compared to when it was new. Distance driven since last estimation is also provided.

Battery temperature Here you can find information about the battery temperature, which can impact charging speed, range and acceleration.

You will get notifications if functions related to the battery health are affected or if you need to take action somehow.

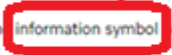
1962.5 (c)(6)(C)(1) compliance:

readable by the user with no more than 5 selectable screens or submenu selections needed to access the parameter from the home or default display/screen

Battery status and health

You can find your car's traction battery status and health in the centre display. **1** **2** **3**

To open the car status view, press the car symbol  in the bottom bar and go to Status and then Battery status. **4 (OR) 4**

Press the information symbol  or downward arrow to find more information for each area:

Charging power	Current estimation of your car's charging power as well as the battery's preconditioning status. You can press the information symbol for more details on the actual charging power and the actual charging limit. If the car is not plugged in the values will be 0.
Battery health	Battery state of health is a measure of how much energy can be stored in the battery compared to when it was new. Distance driven since last estimation is also provided.
Battery temperature	Here you can find information about the battery temperature, which can impact charging speed, range and acceleration.

You will get notifications if functions related to the battery health are affected or if you need to take action somehow.

Section 12.01 Transmission Description

For description of Vehicle Drive Modes / Transmission modes: See section 12.09

Gearbox	Transmission type	Axle Ratio Front	Axle Ratio Rear	Axle Ratio Average	Engine Code	Vehicle Model	Transmission Multimode (yes/no)
N.A.	Fixed single speed	8.77	9.79	9.28	DB	EX90 Twin Motor	No
N.A.	Fixed single speed	8.77	9.79	9.28	DA	EX90 Twin Motor Performance	No

Verify Processing Report

Total Datasets Submitted: 1
Accepted Datasets: 1
Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N
EPA Manufacturer Code : VVX
Vehicle Identification Text : 202625
Vehicle Configuration Number : 0

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 0
Test Group Name : TVVXT00.0ZVG
Model Year : 2026
Actual Test Vehicle Make Text : Volvo
Actual Test Vehicle Model Text : EX90 Twin Motor

Drive Source Details

Drive Source Identifier : E
Fuel Identifier : EL

Fuel Cell Indicator : N
Rechargeable Energy Storage System Indicator : Y
Rechargeable Energy Storage Device Identifier : B
Off Board Charge Capability Indicator : Y
Test Drive Code : A
Shift Indicator Light Usage Identifier : 1
Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0
Correction Factor Value : 0.9866
Correction Sign Identifier : +
Correction Units Code : K

Engine Code Text : DA_1
Engine Rated Horsepower Value : 670
Engine Displacement Value : 0.001

Air Aspiration Details

Air Aspiration Method Identifier : NA
Air Aspiration Method Other Text : N/A - BEV

Charge Air Cooler Identifier : N

Emissions Control Device Comments Text : Electric vehicle**Vehicle Specifications Details**

Curb Weight Value : 5987
Equivalent Test Weight Value : 6500
Gross Vehicle Weight Rating Value : 7360
NV Ratio Value : 106.8
Axle Ratio Value : 9.28

Transmission Specifications Details

Light Duty Transmission Type Identifier : A
Transmission Lockup Indicator : N
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 1

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 43.81
Target CoefficientB Value : 0.1404
Target CoefficientC Value : 0.02128
Set CoefficientA Value : 4.6
Set CoefficientB Value : 0.012
Set CoefficientC Value : 0.0208

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 43.81
Target CoefficientB Value : 0.1404
Target CoefficientC Value : 0.02128
Set CoefficientA Value : 4.6
Set CoefficientB Value : 0.012
Set CoefficientC Value : 0.0208

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 48.19
Target CoefficientB Value : 0.1544
Target CoefficientC Value : 0.02341
Set CoefficientA Value : 0.00
Set CoefficientB Value : 0.0000
Set CoefficientC Value : 0.00000

Manufacturer Comment Text : Tested on 20 inch tire, covering 22 inch tire as worst case. For N/V ratio an average value is calculated. Average N/V 106.8 (Front 101.0 and Rear 112.7). Test is performed with performance SW, as worst.

EPA Generated Test Vehicle Details

Original Receipt Date : 20250822
Hybrid Vehicle Indicator : N
Adjusted Loaded Vehicle Weight Value : 6673

Loaded Vehicle Weight Value : 6287
Total Road Load Horsepower Value : 13.9

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Verify Processing Report

Total Datasets Submitted: 1

Accepted Datasets: 1

Rejected Datasets: 0

The original datasets are listed below. In addition, any information generated by the Verify system is also included. For any rejected datasets, the reason(s) the dataset was rejected is provided below in the Transaction Report for that particular dataset.

Test Vehicle Information Submission

Test Vehicle Information Details

Information Process Code : N

EPA Manufacturer Code : VVX

Vehicle Identification Text : 202625

Vehicle Configuration Number : 1

Vehicle Configuration Details

Vehicle Description Details

Manufacturer Vehicle Configuration Number : 1

Test Group Name : TVVXT00.0ZVG

Model Year : 2026

Actual Test Vehicle Make Text : Volvo

Actual Test Vehicle Model Text : EX90 Twin Motor

Drive Source Details

Drive Source Identifier : E

Fuel Identifier : EL

Fuel Cell Indicator : N

Rechargeable Energy Storage System Indicator : Y

Rechargeable Energy Storage Device Identifier : B

Off Board Charge Capability Indicator : Y

Test Drive Code : A

Shift Indicator Light Usage Identifier : 1

Aged Component Usage Identifier : 4

Odometer Correction Details

Correction Initial Value : 0.0

Correction Factor Value : 0.9866

Correction Sign Identifier : +

Correction Units Code : K

Engine Code Text : DA_1

Engine Rated Horsepower Value : 670

Engine Displacement Value : 0.001

Air Aspiration Details

Air Aspiration Method Identifier : NA

Air Aspiration Method Other Text : N/A - BEV

Charge Air Cooler Identifier : N

Emissions Control Device Comments Text : Electric vehicle**Vehicle Specifications Details**

Curb Weight Value : 5987
Equivalent Test Weight Value : 6500
Gross Vehicle Weight Rating Value : 7360
NV Ratio Value : 106.0
Axle Ratio Value : 9.28

Transmission Specifications Details

Light Duty Transmission Type Identifier : A
Transmission Lockup Indicator : N
Transmission Creeper Gear Indicator : N
Transmission Gear Count : 1

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : C-H-E
Target CoefficientA Value : 38.40
Target CoefficientB Value : 0.1404
Target CoefficientC Value : 0.02128
Set CoefficientA Value : -0.6
Set CoefficientB Value : 0.041
Set CoefficientC Value : 0.0206

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : US06
Target CoefficientA Value : 38.40
Target CoefficientB Value : 0.1404
Target CoefficientC Value : 0.02128
Set CoefficientA Value : -0.6
Set CoefficientB Value : 0.041
Set CoefficientC Value : 0.0206

Target Set Coefficient Details

Test Procedure Dynamometer Coefficients Category : Cold-CO
Target CoefficientA Value : 42.24
Target CoefficientB Value : 0.1544
Target CoefficientC Value : 0.02341
Set CoefficientA Value : 0.00
Set CoefficientB Value : 0.0000
Set CoefficientC Value : 0.00000

Manufacturer Comment Text : Tested on 21 inch tire. For N/V ratio an average value is calculated. Average N/V 106.0 (Front 100.0 and Rear 112.0). Test is performed with performance SW, as worst.

EPA Generated Test Vehicle Details

Original Receipt Date : 20250826
Hybrid Vehicle Indicator : N
Adjusted Loaded Vehicle Weight Value : 6673

Loaded Vehicle Weight Value : 6287
Total Road Load Horsepower Value : 13.1

Transaction Status Details

Transaction Status Identifier : ACCEPTED

Section 12.02.04
TEST VEHICLE DESCRIPTION .

Please refer to VERIFY Vehicle Information in Section 12.02.03 &
VERIFY Certification Summary Information Report in Section 07.01

Test vehicles generating data for Test Group TVVXT00.0ZVG 2026MY								
Vehicle ID	Model Type	Engine code	Transmission	Certification purposes		Aging Method	Test Group	Original MY
				Data	Emission			
202625	EX90 Twin Motor Performance	DA/DB	E-AWD	FEDV	RANGE	2K SRC	TVVXT00.0ZVG	2026

Section 12.03**LABEL FORMAT****Section 12.03.01****VEHICLE EMISSION CONTROL INFORMATION LABEL**

LABEL INFO: Label size: 103 x 41 mm
 Label location: Engine compartment, on the hood

Test Group: TVVXT00.0ZVG
Engine Code: DA_1, DB_1
Vehicles: EX90 Twin motor Performance, EX90 Twin motor

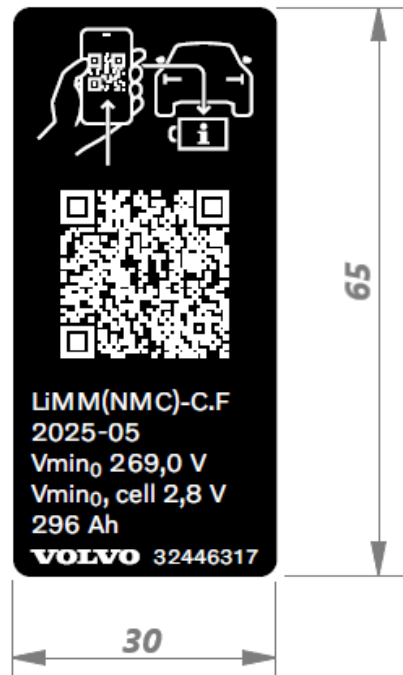
Volvo Car Corporation	
VEHICLE EMISSION CONTROL INFORMATION	
Conforms to regulations	2026 MY
U.S. EPA/Canada: T3B0 LDT	Fuel: Electric
California: ZEV LDT	Fuel: Electric
Battery Electric Vehicle	
Group: TVVXT00.0ZVG	
Loaded I/M testing must be conducted on a 4WD speed synchronized dyno. Otherwise, a non-loaded test procedure must be performed.	
VOLVO	32408855

S12.03.03 BATTERY LABEL Volvo EX90

Content and size

PRINTED EXAMPLE

[mm]

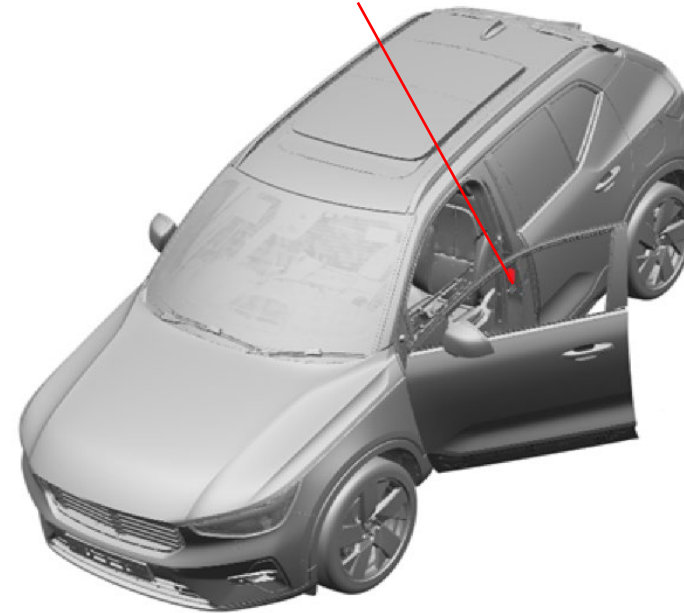


PLEASE NOTE!

When we build a battery a battery serial number is created. When the QR code is created is it coded with **serial number**.

When the vehicle reaches factory complete is a battery passport/data-repository created. This means that **every car has its individual QR-code** (i.e. this QR code does not work, it is a label sample)

Placement



Sample link to battery repository website including one individual specific battery as example.

<https://batterypassport.volvocars.com/0SJPE510000006E1R0000001>

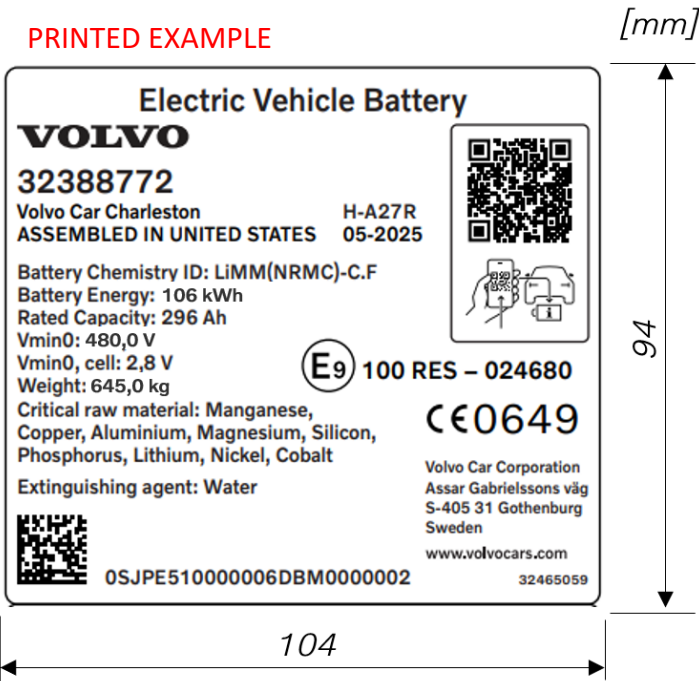
Issued: 09 08 2025 /MW

Revised:

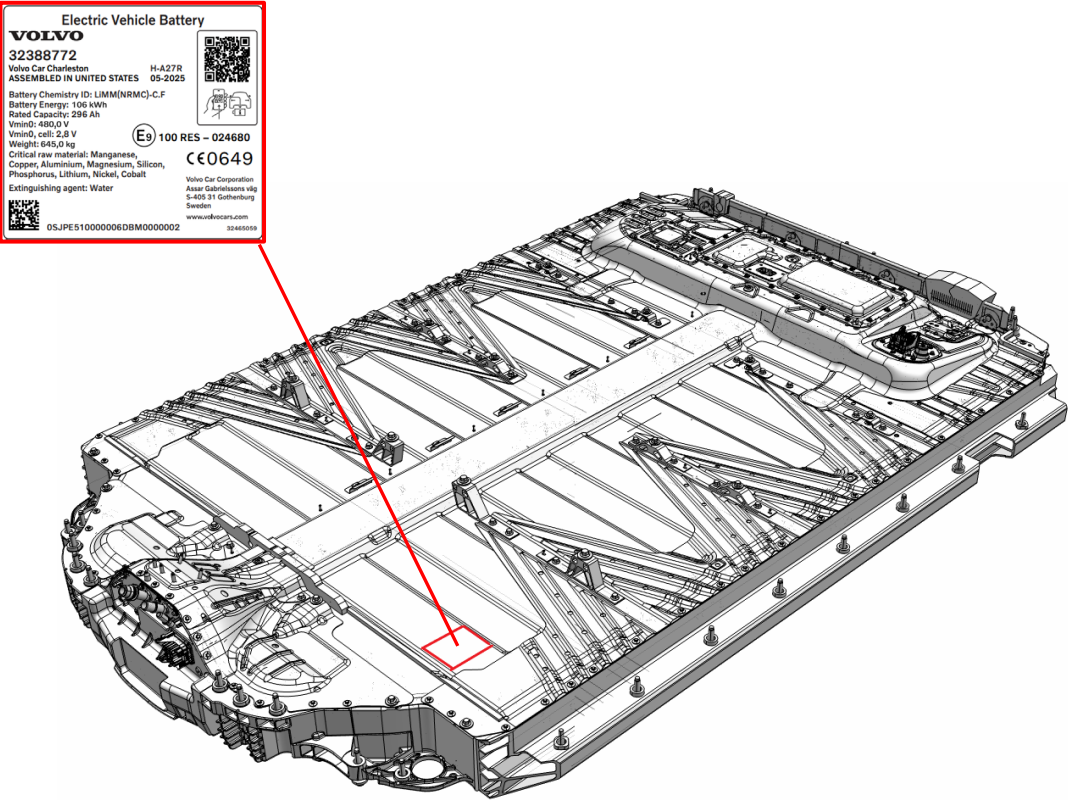
S12.03.03 BATTERY LABEL

Volvo EX90

Content and size

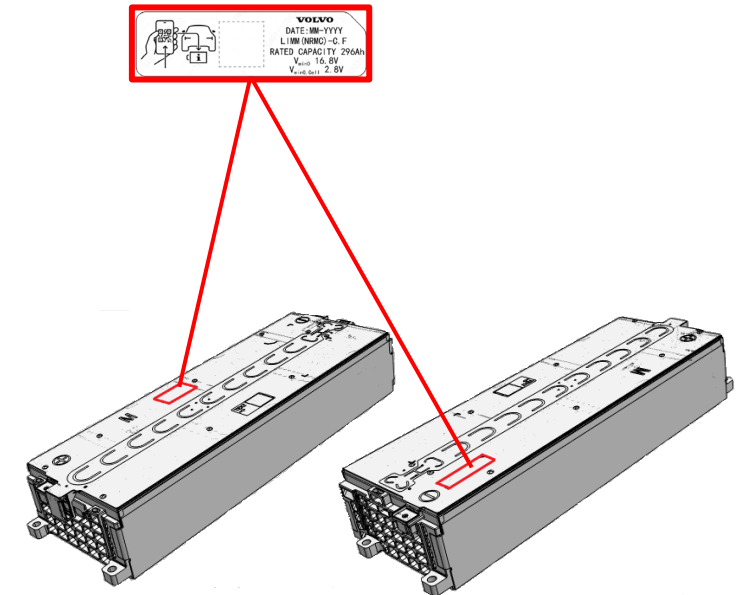
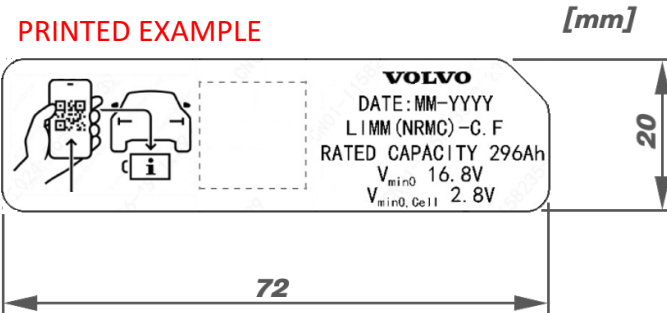


Placement



S12.03.03 BATTERY LABEL Volvo EX90

Content and size



S12.05 List of Certified vehicles													
Test Group:		TVVXT00.0ZVG											
Evap Families:		N/A											
Emission Fuel:		N/A											
Fuel Economy Fuel:		N/A											
Carline	Model Type	Vehicle Model	Vehicle Class	Sales Area	Engine Name	Engine Displ [liter]	Engine Code	Fuel tank volume [liter]	Evap Code	Emission Control System	Transm Type	Transm Class	ETW
EX90	EX90 Twin Motor Performance	Wagon	Standard SUV 4WD	50 S	E800V32	N/A	DA_1	N/A	N/A	N/A	N/A	N/A	6500
EX90	EX90 Twin Motor Performance	Wagon	Standard SUV 4WD	50 S	E800V32	N/A	DA_1	N/A	N/A	N/A	N/A	N/A	6500
EX90	EX90 Twin Motor	Wagon	Standard SUV 4WD	50 S	E800V33	N/A	DB_1	N/A	N/A	N/A	N/A	N/A	6500
EX90	EX90 Twin Motor	Wagon	Standard SUV 4WD	50 S	E800V33	N/A	DB_1	N/A	N/A	N/A	N/A	N/A	6500

June 16, 2025

Mr. Byron Bunker, Director
Compliance Division
OTAQ
U.S. Environmental Protection Agency
2000 Traverwood Drive
Ann Arbor, Michigan 48105

Ms. Robin U. Lang, Division Chief
Emissions Certification and Compliance Division
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Dear Mr. Bunker and Ms. Lang:

Volvo Car USA, LLC (Volvo) herewith submits an Application for Certification for 2026MY all- electric powered light-duty trucks (LDT's) contained in Volvo's 50-State test group TVVXT00.0ZVG. This test group has a target sales start date of November, 2025.

This test group complies with all applicable California and Federal regulations.

The emission standards applicable to this test group are as follows:

Federal Certification Exhaust Emission Standards

Tier 3 Bin 0 Standards 150K

Federal In-Use Exhaust Emission Standards

Tier 3 Bin 0 Standards 150K

California Certification Exhaust Emission Standards

LEV IV / ACC2 ZEV Standards 150K

California In-Use Exhaust Emission Standards

LEV IV / ACC2 ZEV Standards 150K

Federal Certification Evaporative Standards

Not Applicable (Electric Vehicle)

Federal In-Use Evaporative Standards

Not Applicable (Electric Vehicle)

California Certification Evaporative Standards

Not Applicable (Electric Vehicle)

California In-Use Evaporative Standards

Not Applicable (Electric Vehicle)

As provided in 40 CFR 86.1848-10 (d), Volvo has elected to submit an Application for each test group. This Part I Application has been prepared in accordance with the standardized format recommended by EPA via its Mail Out # CD-14-19, subject: "Certification Application Reporting Guidance" dated November 24, 2014.

All other sections of the Application (e.g., The Common Section) not contained herein are hereby included in this Application by reference.

Therefore, in accordance with the provisions of 40 CFR 86.1844-01, Volvo requests that a U.S. EPA Certificate of Conformity and CARB executive order to be issued for the LDV's listed in this Application for Certification.

Please do not hesitate to contact me if you have any questions regarding this submission.

Sincerely,

VOLVO CARS USA, LLC
Certification, Regulatory & Compliance



Bruno DiGennaro
Senior Manager, Certification & Conformity

US EPA Fee Form

[Help and EPA Instructions](#)

* Required Field

General Information

Date: 06/25/2025

Process Code *

Submit New Fee Filing Form

Manufacturer Code *

VVX

Manufacturer Name *

Volvo Car USA, LLC

Contact Name *

Bryant Lowry

Contact Email Address *

BRYANT.LOWRY@VOLVOCARS.COM

Contact Phone *

18432763791

Calendar Year complete application submitted
to EPA *

2025

PLEASE NOTE: These fees apply to complete certification applications received by EPA from January 1, 2025, through December 31, 2025. The applicable fee is determined by the

calendar year in which the complete certification application is received, not the model year.

Engine Family / Evaporative Family / Test Group *

TVVXT00.0ZVG

Certificate Request Type (Industry Sector Code)

Certificate Request Type *

- ☒ On-Highway LDV, LTD, MDVPV, HDV Chassis Cert (Federal) (A, B, D, J, T, V)
- ☐ On-Highway HDE Dyno Cert (Federal) (E, H)
- ☐ On-Highway LD ICI, MDPV ICI, HDV ICI (A, B, D, J, T, V)
- ☐ On-Highway Motorcycle (C)
- ☐ On-Highway HDV Evap (F)
- ☐ On-Highway LDV, LTD, MDVPV, HDV Chassis Cert (California-Only) (A, B, D, J, T, V)
- ☐ On-Highway HDE Dyno Cert (California-Only) (E, H)
- ☐ Nonroad CI (L)
- ☐ Nonroad SI (B, S)
- ☐ Locomotive (G, K)
- ☐ All Nonroad Recreational, excluding Marine engines (X, Y)
- ☐ All Marine (Including IMO) (M, N, W)
- ☐ Component Certification for Evaporative Emissions (P)

IMO Name (Required for dual US/IMO Marine Only)

ICI VIN Number (Required for ICIs Only)

Do you qualify for a Reduced Fee? *

No

Payment Information

Amount Owed

\$32,939.00

Payment Type *

Offline Wire

Comments

Certification fees for:

EX90 Twin Performance

EX90 Twin

EPA Form Number 3520-29

OMB Control No. 2060-0545

Approval expires 7/31/2027

The public reporting and recordkeeping burden for this collection of information is estimated to average 12 minutes per response. Send comments on the Agency's need for this information, the accuracy of the provided burden estimates, and any suggested methods for minimizing respondent burden, including through the use of automated collection techniques to the Director, Collection Strategies Division, U.S. Environmental Protection Agency (2822T), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460. Include the OMB control number in any correspondence. Do not send the completed forms to this address.

The content of this document may contain Sensitive But Unclassified (SBU) data and/or Controlled Unclassified Information (CUI).

S15.02 Fee Filing Form EPA (Receipt)

 fees@epa.gov
To:  Lowry, Bryant

 Reply  Reply all  Forward    ...

Thu 2025-06-26 11:49

 **Flagged Start by 2025-06-26. Due by 2025-06-26.**

To the representative for Volvo Car USA, LLC:

Your certification Fee Filing Form(s) submitted for the following family or test group(s) and the associated financial documentation for your payment of \$32939.00 were received on 06/26/2025.

- TVVXT00.0ZPH

This message indicates only that EPA has received record of your payment and form(s) for the above certification fee. It does not constitute the granting of a Certificate of Conformity by EPA or convey any information about the status of your certification application for the subject family or test group(s).

Please do not respond to this email. If you have any questions regarding certification of the family or test group(s), please contact your EPA Certification Representative; for questions on fees, contact Fees@epa.gov.

 fees@epa.gov
To:  Lowry, Bryant

 Reply  Reply all  Forward    ...

Mon 2025-07-07 08:58

To the representative for Volvo Car USA, LLC:

Your certification Fee Filing Form(s) submitted for the following family or test group(s) and the associated financial documentation for your payment of \$98817.00 were received on 07/07/2025.

- TVVXT00.0ZPG

- TVVXT00.0ZVG

- TVVXT00.0ZVH

This message indicates only that EPA has received record of your payment and form(s) for the above certification fee. It does not constitute the granting of a Certificate of Conformity by EPA or convey any information about the status of your certification application for the subject family or test group(s).

Please do not respond to this email. If you have any questions regarding certification of the family or test group(s), please contact your EPA Certification Representative; for questions on fees, contact Fees@epa.gov.

S15.03 Compliance Invoice Adjustment Form (CARB)

MOBILE SOURCE CERTIFICATION AND COMPLIANCE FEE PAYMENT FORM FOR ON-ROAD APPLICATIONS ONLY

CARB USE ONLY

Invoice Name	MSF241373
Invoice Date	Jun 25, 2025

COMPANY INFORMATION

Company Name	Volvo Car USA LLC
Address	270 THREE POINT DRIVE
City	RIDGEVILLE
State	SC
Zip	29472
Country	United States
Contact Name	Bryant Lowry
Contact Telephone Number	8432763791
Contact Email	bryant.lowry@volvocars.com
CARB Customer Number	CCAM000086

APPLICATION INFORMATION

Payment Row Number	Product Description or File Name	Model Year/Calendar Year	Unique Application Identifier: Test Group, Engine Family, Trailer Family, Vehicle Family, ZEP Family, if applicable (ID listed in payment row must match the unique identifier given to the certification application)	Category Type	Fee Type	Amount
1	EX90 Twin Performance/ EX90 Twin	Model Year 2026	TVVXT00.0ZVG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00
2	Polestar 3 LRDM Performance Pack Polestar 3 LRDM	Model Year 2026	TVVXT00.0ZPG	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00
3	EX90 LRSM	Model Year 2026	TVVXT00.0ZVH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00
4	Polestar 3 LRSM	Model Year 2026	TVVXT00.0ZPH	Light-duty vehicle test group and medium-duty vehicle test group	Zero-Emission	\$ 12,111.00

Total Due	\$ 48,444.00
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I, Bryant Lowry, attest that any information provided is true, accurate, and complete.
(Responsible Party Signature Here)

Section 16.01 STATEMENT OF CONFIDENTIALITY

According to Class determination 3-78, the following sections in the below listed Applications are determined by Volvo to be kept as confidential.

Test Group Applications:**Sections:**

02	Durability Group Description
04.02.02	Ozone resistance
04.05	Battery Aging Procedure Description
04.06	Battery Aging Simulation Data
09	OBD System
10.03	Vehicle Safe Operation
10.10	Battery specific energy calculation
10.11	Data used by MFR To establish that the battery state of health
10.12	Expected degradation in usable battery energy
10.13	Identification and description of the charging system
10.14	Identification and description of the propulsion system
10.15	Identification and description of energy storage system
10.16	Identification and description of climate control system
10.17	cycle specific and combined cycle energy consumption and range test results
10.18	Attestation of alternative UDDS test and AER/EAER ratio of 4 UDDS w/o engine startup (PHEV only)
10.19	Identification of each of the unique range values and the vehicle variants that each range value applies to
10.20	SAE J1634 test methodology used
11	AECD Descriptions
12.04	Vehicle Test Parameters
12.09	Drive Modes Description
12.11	Description of DCF (Disc Cleaning Function)
12.12	Climate settings for Certification Testing
17.06	California High Priced Parts List (Not Confidential for Final Application)
17.09	Warranty Booklet Reference (Not Confidential for Final Application)
17.11	ZEV OBD according to 1962.5 (e)(5)

Common Application:**Part 1 Sections:**

04.01	Evap Bench Aging procedure description & Approval
04.03	Exhaust Emissions Durability Test Procedures
11	AECD Descriptions
12.02.02	FE Label Testing Selection
12.04	Vehicle Test Parameters
12.04.01	List of Test Vehicle Parameters (Not Confidential for Final Application)
12.07	California EVAP Supplemental Information
12.10	Stop-Start Disable Criteria
12.13	AC System Description
13	US Projected Sales / Phase in / Fleet average
17.03	Compliance Plan / Phase in / Fleet average
18.01	Canada Projected Sales
18.02	Canada Compliance & Sales Information
18.03	Canada FE Label Testing Selection
18.04	Canada Compliance Plan / Phase in / Fleet average

Part 2 Sections:

02	Calibration Information
04	Actual Sales
07	Actual Sales (Canada)

Section 17.04.06 Cycle specific and cycle combined energy data

EPA EV Multicycle Calculator (SAE J1634 Oct 2012)									
Manufacturer: Volvo					As used by EPA laboratory				
Carline: EX90 Twin Motor									
Model Year 2026					D.Good		March 8, 2016		
Vehicle 202625									
Test Number E1_250702_007									
Comments:									
Lab Volvo									
Test Date 07/02/2025									
Cycle	Energy (Wh)	Distance (mi)	ECdc_cyc	Kuwtg	Kwgt	Recharge			
						AC WattHrs			
UDDS1	1905.1	7.458	255.44	63.86	4.72	1	116465		
UDDS2	1770.3	7.456	237.43	59.36	77.68	3	Recharge		
UDDS3	1711.6	7.440	230.05	57.51	75.27	5	DC WattHrs		
UDDS4	1724.1	7.471	230.77	57.69	75.50	7	106002		
HWY1	2632.1	10.258	256.59	128.29		2	UDDS weighted	UDDS Integrated DC	UDDS
HWY2	2591.4	10.239	253.09	126.55		6	Wh/mi	KW-HRS	DC kWh/mi
SS1	76281.8	237.414	321.30			4	233.17	7.11	0.240
SS2	14557.4	45.696	318.57			8	HWY average	HWY Integrated DC	HWY
TOTAL	103173.80	333.432					Wh/mi	KW-HRS	DC kWh/mi
							254.84	5.22	0.262
K-Factors	UDDS1	UDDS2	UDDS3	UDDS4	HWY1	HWY2			
Unweighted	0.250	0.250	0.250	0.250	0.500	0.500			
Weighted	0.018	0.327	0.327	0.327	NA	NA			
Results	Range (mi)	AC Wh/mi	MPGe	kWh/100mi		EPA version			
UDDSu	432.729	269.1405				kWh/100mi			
UDDSw	442.479	263.2100	128.0536	26.32100		26.32100			
HWY	404.856	287.6700	117.1655	28.76700		28.76700			

EPA EV Multicycle Calculator (SAE J1634 Oct 2012)									
Manufacturer:		Volvo				As used by EPA laboratory			
Carline:		EX90 Twin Motor (21 Inch Wheels)							
Model Year		2026				D.Good		March 8, 2016	
Vehicle		202625							
Test Number		E1_250628_000							
Comments:									
Lab		Volvo							
Test Date		06/28/2025							
						Recharge			
Cycle	Energy (Wh)	Distance (mi)	ECdc_cyc	Kuwtg	Kwgt	AC WattHrs			
UDDS1	1817.1	7.455	243.74	60.93	4.31	1	116672		
UDDS2	1699.1	7.462	227.70	56.93	74.56	3	Recharge		
UDDS3	1675.9	7.445	225.10	56.28	73.71	5	DC WattHrs		
UDDS4	1682.8	7.471	225.24	56.31	73.76	7	105654		
HWY1	2554.2	10.246	249.29	124.64		2	UDDS weighted	UDDS Integrated DC	UDDS
HWY2	2545.4	10.248	248.38	124.19		6	Wh/mi	KW-HRS	DC kWh/mi
SS1	78755.9	248.831	316.50			4	226.33	6.87	0.232
SS2	12129.9	38.820	312.47			8	HWY average	HWY Integrated DC	HWY
							Wh/mi	KW-HRS	DC kWh/mi
TOTAL	102860.25	337.978					248.83	5.10	0.256
K-Factors	UDDS1	UDDS2	UDDS3	UDDS4	HWY1	HWY2			
Unweighted	0.250	0.250	0.250	0.250	0.500	0.500			
Weighted	0.018	0.327	0.327	0.327	NA	NA			
Results	Range (mi)	AC Wh/mi	MPGe	kWh/100mi	EPA version				
UDDSu	446.353	261.3897			kWh/100mi				
UDDSw	454.472	256.7200	131.2909	25.67200	25.67200				
HWY	413.369	282.2465	119.4169	28.22465	28.22465				

S 17.07 California Compliance Statements & summary information including ZEV classification.

Test Group: TVVXT00.0ZVG

Certification Standard and Summary Matrix:

Engine Code Type: 50S
 Exhaust Standard: LEV IV / ACC2 / ZEV
 Exhaust, EVAP & Fuel: N.A. (Electricity / BEV)

FTP/SFTP/EVAP Emission Standard / Emission Control Device Statement:

Not applicable, Only All Electric Vehicle in this Test Group, no Exhaust emissions.

Environmental Performance Label Information:

Volvo applies new EPA label in lieu of the CA EP label.

VECI label durability statement (40 CFR 86.1807(a)(2)):

The label shall be affixed by the vehicle manufacturer who has been issued the Certificate of Conformity for such vehicle, in such manner that it cannot be removed without destroying or defacing the label. The label shall not be affixed to any equipment which is easily detached from such vehicle.

Defeat Devices - All Test Groups

Volvo states that all our 2026 MY test groups that we are applying for certification herein, include no defeat devices.

This Test Group contains All Electric Vehicles only, so Defeat Device is Not Applicable.

Test Procedure used

For UDDS and Highway Range Volvo use SAE J1634 (Version 2017)
 As approved by CARB of 06.27.2023.

Vehicle and Battery Break-in period and method

Volvo break-in vehicles and Battery to 2000 miles with SRC as described in
 40 CFR 86.1831-01

Alternating Current (AC) Charger Inlet

All AC charger inlet and charging system in this test group fulfill the requirements of 13 ccr 1962.3 and meets the specifications applicable to AC Level 1 and Level 2 charging contained in SAE Surface Vehicle Recommended Practice SAE J1772 REV OCT 2017, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charger Coupler. All on-board chargers have a minimum output of 5.76 kilowatts.

All DC charger inlet and charging system in this test group fulfill the requirements of 13 ccr 1962.3 and meets the specifications applicable to DC charging contained in SAE Surface Vehicle Recommended Practice SAE J1772 REV OCT 2017, SAE Electric Vehicle and Plug in Hybrid Electric Vehicle Conductive Charger Coupler.

Charging Cord

All vehicles are supplied with a charging cord of minimum 20 feet of length.

All charging cords meet the specifications of AC Level1 minimum amperage of 12 amps and AC Level2 minimum amperage of 24 amps.

All charging cords are tested and listed by a NTRL according to (UL) 2594.

S1962.4(i)(1) ZEV Test Group Justification

Volvo states that all vehicles in this Test Group have the same battery configuration, motor configuration and expected degradation in usable battery energy during useful life.

	EX90 Twin Motor	EX90 Twin Motor Performance
Battery Config.	Battery#1	Battery#1
Number of motors	2	2
Number of motor phases (front)	3-phase	3-phase
Number of motor phases (rear)	3-phase	3-phase
Motor Type (front)	ACI	ACI
Motor Type (rear)	PMSM	PMSM
Motor cooling	Liquid	Liquid
Expected Degradation in UBE	UBE Deg#1	UBE Deg#1

Battery#1: 106 kWh liquid cooled Lithium-Ion Graphite / Nickel Mangan Cobalt Battery (ref S10.01)

UBE Deg#1: Expected degradation of UBE is related to a combination of:

- Calendar Aging: This happens even when the battery is not in use, and is primarily influenced by temperature, state of charge, and time.
- Cycle Aging: This occurs due to repeated charging and discharging cycles, leading to capacity fade and increased internal resistance.
- Fast Charging (DC charging)

Only Cycle aging could be different for different vehicles within this Test Group:

- The vehicles in this Test Group, EX90 Twin Motor & EX90 Twin Motor Performance are equal in terms of weight and aerodynamics. The impact of the difference in used power from the battery is negligible in terms of battery degradation.

California Supplementary Questions:**1. Do the test and production vehicles have a defeat device?**

- No, Volvo Cars never has and never will fit any device to its vehicles that manipulates emission performance during emission tests.
- Please see reference in section 08.01 "Statement of Compliance".
"Volvo Car Corporation certifies that all 2026MY Test Groups are free of defeat devices and strategies"

2. Have all AECDs been declared and described in the application?

- AECD not applicable for ZEV/BEV's.

3. Do the test and production vehicles have alternate maps?

- AECD not applicable for ZEV/BEV's.

4. Is the transmission part of any AECD, for example, by receiving outputs from the ECU or providing inputs to the ECU, in any emission control strategy, for example, engine and/or catalyst warm-up

- For the transmission, and as stated and described under sections 12.01 and 12.09 of our application for certification, Transmission Description and Drive mode Description describes the default mode of operation. No other AECD operations are stated and/or used.

5. Does the transmission behave and perform the same as, or differently than, while on road versus on a dynamometer? Please explain any differences

- The transmission behaves the same on-road and on the dynamometer.

Classification of ZEVs.

Vehicle in this test group: Polestar 3 Long Range Dual Motor Performance Pack and Polestar 3 Long Range Dual Motor qualify for ZEV Allowance:

Requirements for ZEVs. ZEVs must meet the following requirement in 1962.4 (d)

- (1) Certification Range Value. Minimum certification range value greater than or equal to 200 miles.
- (2) ZEV Durability Requirement for Useful Life.
Meet requirements set forth in CCR, title 13, section 1962.7.
- (3) Battery Labeling Requirements.
Meet requirements set forth in CCR, title 13, section 1962.6.
- (4) Data Standardization.
Meet requirements set forth in CCR, title 13, section 1962.5.
- (5) Service Information Requirements.
Meet requirements set forth in CCR, title 13, section 1969.
- (6) ZEV Warranty Requirements.
Meet requirements set forth in CCR, title 13, section 1962.8.
- (7) Charging Requirements.
For battery electric vehicles (BEV) and plug-in hybrid fuel cell electric vehicles (FCEV) meet requirements set forth in CCR, title 13, section 1962.3.

UDDS AER:

EX90 Twin Motor Performance	442.479 miles
EX90 Twin Motor Performance (21 Inch wheels)	454.472 miles
EX90 Twin Motor	442.479 miles
EX90 Twin Motor (21 Inch wheels)	454.472 miles

HWY AER:

EX90 Twin Motor Performance	404.856 miles
EX90 Twin Motor Performance (21 Inch wheels)	413.369 miles
EX90 Twin Motor	404.856 miles
EX90 Twin Motor (21 Inch wheels)	413.369 miles

Certification Range:

$(\text{UDDS AER} \times 0.55) + (\text{HWY AER} \times 0.45) = \text{Certification Range}$

EX90 Twin Motor Performance	426 miles
EX90 Twin Motor Performance (21 Inch wheels)	436 miles
EX90 Twin Motor	426 miles
EX90 Twin Motor (21 Inch wheels)	436 miles

ZEV Allowance:

EX90 Twin Motor Performance	1.0
EX90 Twin Motor Performance (21 Inch wheels)	1.0
EX90 Twin Motor	1.0
EX90 Twin Motor (21 Inch wheels)	1.0

Certification review sheet

Model Year	Test Group	Vehicle Type	ZEV Type	ZEV Fuel Type
2026	TVVXT00.0ZVG	LDT	ZEV	LI+

		Vehicle Type	ZEV Type	ZEV Fuel Type	Certification Range (miles)	ZEV Credit
Make	Model					
Volvo	EX90 Twin Motor Performance	LDT	ZEV	LI+	426	1.00
Volvo	EX90 Twin Motor Performance (21 Inch wheels)	LDT	ZEV	LI+	436	1.00
Volvo	EX90 Twin Motor	LDT	ZEV	LI+	426	1.00
Volvo	EX90 Twin Motor (21 Inch wheels)	LDT	ZEV	LI+	436	1.00