



Document Title: Description	Function Group: 000	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Description

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

L90E is a four-wheel drive loader with articulated steering.

The engine is a six cylinder, four-stroke, direct-injection, turbocharged diesel engine of the type D6D.

The hydraulic transmission is hydromechanical, where all gears are in constant mesh, with the designation HTE202.

There is a single-stage hydraulic torque converter between the engine and the transmission.

Front and rear axles have fully floating drive shafts with planetary gears in the wheel hubs. The front axle is equipped with a differential lock.

The machine's service brake and parking brake are of the type wet disc brake. The service brake is integrated with each wheel hub, and the parking brake is placed on the transmission output shaft.

The steering system is hydrostatic with a variable load-sensing axial piston pump and two hydraulic cylinders (steering cylinders).

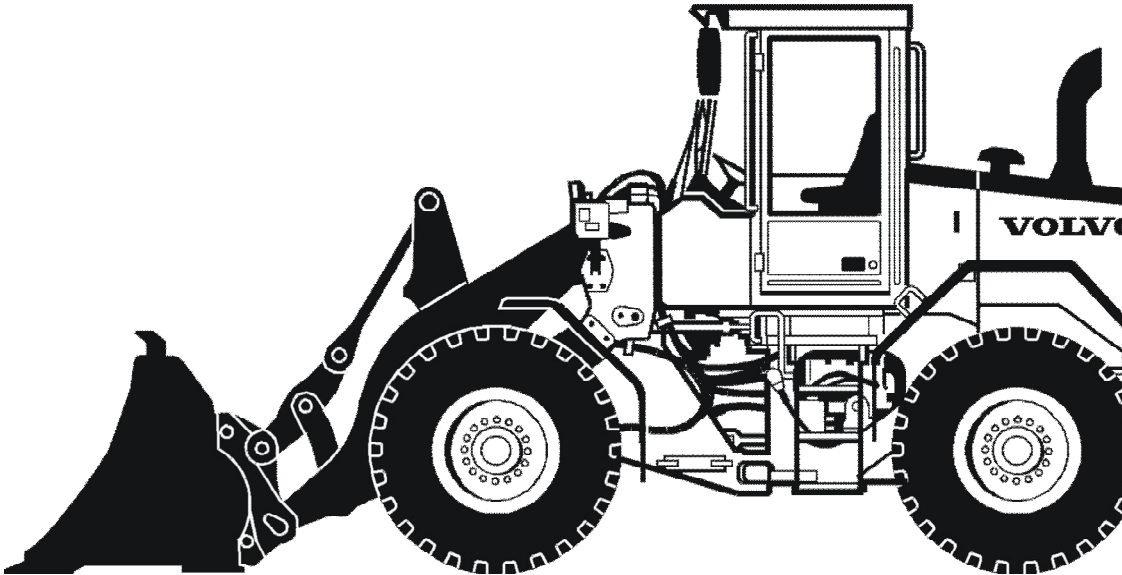


Figure 1

Sample manual. Download All 1470 pages at:

<https://www.arepairmanual.com/downloads/l90e-volvo-wheel-loaders-service-manual/>



Document Title: Measurement conversion tables	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
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Measurement conversion tables

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Length

Unit	cm	m	km	in	ft	yd	mile
cm	1	0.01	0.00001	0.3937	0.03281	0.01094	0.000006
m	100	1	0.001	39.37	3.2808	1.0936	0.00062
km	100000	1000	1	39370.7	3280.8	1093.6	0.62137
in	2.54	0.0254	0.000025	1	0.08333	0.02777	0.000015
ft	30.48	0.3048	0.000304	12	1	0.3333	0.000189
yd	91.44	0.9144	0.000914	36	3	1	0.000568
mile	160930	1609.3	1.6093	63360	5280	1760	1

1 mm = 0.1 cm - 1 mm = 0.001 m

Area

Unit	cm ²	m ²	km ²	a	ft ²	yd ²	in ²
cm ²	1	0.0001	-	0.000001	0.001076	0.000012	0.155000
m ²	10000	1	0.000001	0.01	10.764	1.1958	1550.000
km ²	-	1000000	1	10000	1076400	1195800	-
a	0.01	100	0.0001	1	1076.4	119.58	-
ft ²	-	0.092903	-	0.000929	1	0.1111	144.000
yd ²	-	0.83613	-	0.008361	9	1	1296.00
in ²	6.4516	0.000645	-	-	0.006943	0.000771	1

1 ha = 100 a - 1 mile² = 259 ha = 2.59 km²

Volume

Unit	cm ³ = cc	m ³	l	in ³	ft ³	yd ³
cm ³ = ml	1	0.000001	0.001	0.061024	0.000035	0.000001
m ³	1000000	1	1000	61024	35.315	1.30796
dm ³ (l)	1000	0.001	1	61.024	0.035315	0.001308
in ³	16.387	0.000016	0.01638	1	0.000578	0.000021
ft ³	28316.8	0.028317	28.317	1728	1	0.03704
yd ³	764529.8	0.76453	764.53	46656	27	1

1 gal (US) = 3785.41 cm³ = 231 in³ = 0.83267 gal (UK)

Sample manual. Download All 1470 pages at:

<https://www.arepairmanual.com/downloads/l90e-volvo-wheel-loaders-service-manual/>

Weight

Unit	g	kg	t	oz	lb
g	1	0.001	0.000001	0.03527	0.0022
kg	1000	1	0.001	35.273	2.20459
t	1000000	1000	1	35273	2204.59
oz	28.3495	0.02835	0.000028	1	0.0625
lb	453.592	0.45359	0.000454	16	1

1 ton (metric) = 1.1023 ton (US) = 0.9842 ton (UK)

Pressure

Unit	kp/cm ²	bar	Pa=N/m ²	kPa	lbf/in ²	lbf/ft ²
kp/cm ²	1	0.98067	98066.5	98.0665	14.2233	2048.16
bar	1.01972	1	100000	100	14.5037	2088.6
Pa=N/m ²	0.00001	0.001	1	0.001	0.00015	0.02086
kPa	0.01020	0.01	1000	1	0.14504	20.886
lbf/in ²	0.07032	0.0689	6894.76	6.89476	1	144
lbf/ft ²	0.00047	0.00047	47.88028	0.04788	0.00694	1

kg/cm² = 735.56 Dry (mmHg) = 0.96784 atm

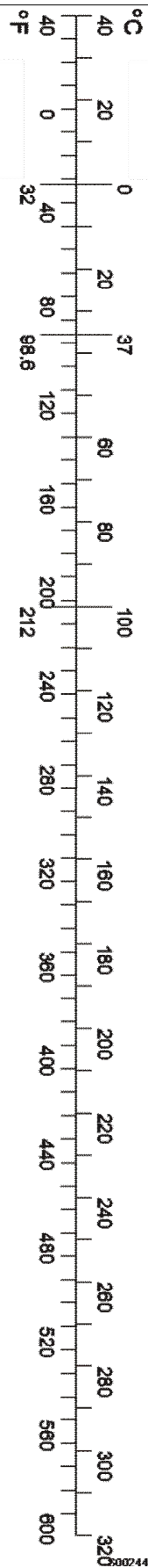
Unit explanations

Unit	abbreviation
Newton meter	Nm
Kilopoundmeter	kpm
Kilopascal	kPa
Megapascal	MPa
Kilowatt	kW
kilojoule	kJ
British thermal unit	Btu
Calorie	ca

Approx. conversion

SI unit	Conversion factor	Non SI	Conversion factor	SI
Torque				
Nm	x10.2	=kg/cm	x0.8664	=lb in
Nm	x0.74	=lbf-ft	x1.36	=Nm
Nm	x0.102	=kg/m	x7.22	=lbft
Pressure (Pa = N/m²)				
kPa	x4.0	=in.H ₂ O	x0.249	=kPa
kPa	x0.30	=in.Hg	x3.38	=kPa
kPa	x0.145	=psi	x6.89	=kPa
bar	x14.5	=psi	x0.069	=bar
kp/cm ²	x14.22	=psi	x0.070	=kp/cm ²
N/mm ²	x145.04	=psi	x0.069	=bar
MPa	x145	=psi	x0.00689	=MPa
Power (W = J/s)				

kW	x1.36	=hp(cv)	x0.736	=kW
kW	x1.34	=bhp	x0.746	=kW
kW	x0.948	=Btu/s	x1.055	=kW
W	x0.74	=ft.lb/s	x1.36	=W
Energy (J = Nm)				
kJ	x0.948	=Btu	x1.055	=kJ
J	x0.239	=calorie	x4.19	=J
Speed and acceleration				
m/s ²	x3.28	=ft/s ²	x0.305	=m/s ²
m/s	x3.28	=ft/s	x0.305	=m/s
km/h	x0.62	=mph	x1.61	=km/h
Horsepower/torque				
Bhp x5252 rpm= TQ (lb-ft)			TQ x rpm 5252=bhp	
Temperature				
°C =(°F-32)/1.8			°F =(°C x1.8) +32	
Flow factor				
l/min (dm ³ /min)	x0.264	= US gal/min	x3.785	=liter/min



Document Title: Volvo standard tightening torques	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Volvo standard tightening torques

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Model	Production site	Serial number start	Serial number stop
L90E Volvo			

The tightening torques in the following tables apply to bolts and nuts with tensile strength. The tables should be used as a general instruction for tightening bolts and nuts without specified values. The charts contains values for course thread bolts and nuts.

Torque values should be increased with $\approx 10\%$, for flange bolts.

All standard torques for bolts are without surface treatment.

The standard torque for bolts lubricated with oil should be reduced with 20% of the given value.

Standard tightening torque charts

Bolt size Metric Coarse Threads	Tensile strength 8.8		Tensile strength 10.9	
	(Nm)	(lbf ft)	(Nm)	(lbf ft)
M5	6	4	8	6
M6	10	7	14	11
M8	25	18	35	26
M10	50	37	70	52
M12	87	64	122	90
M14	139	103	195	144
M16	213	157	299	220
M18	293	216	413	305
M20	416	307	585	432
M24	719	530	1010	745
M27	1060	782	1490	1100
M30	1140	840	2025	1493
M36	2500	1844	3600	2653

Bolt size Inch SAE Coarse Threads	Tensile strength 5		Tensile strength 8	
	(lbf ft)	(Nm)	(lbf ft)	(Nm)
1/4	10	13,6	14	19
5/16	21	28,5	29	39,3
3/8	37	50,2	52	70
7/16	59	80	84	114
1/2	90	122	128	174
9/16	130	176	184	250
5/8	180	244	254	345

3/4	320	434	451	612
7/8	515	700	728	988
1	775	1052	1091	1480
1 1/8	953	1290	1545	2100
1 1/4	1344	1823	2180	2960
1 3/8	1600	2170	2650	3600
1 1/2	2000	2714	3200	4340

Document Title: Engine, weight	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
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Engine, weight

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Engine	
Engine	590 kg (1300 lb)

Document Title: Engine, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Engine, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Engine		
Designation		D6DLAE2
Engine power at 32.0 r/s (1900 rpm)	SAE J1349	121 kW (162 hp)
Torque at 23.3 r/s (1400 rpm)	SAE J1349	732 Nm (540 lbf ft)
Engine power, max. at 32.0 r/s (1900 rpm)	SAE J1995	122 kW (164 hp)
Torque at 23.3 r/s (1400 rpm)	SAE J1995	739 Nm (545 lbf ft)
Number of cylinders		6
Cylinder bore		98 mm (4.256 in)
Stroke		126 mm (4.961 in)
Cylinder capacity		5.7 dm ³ (347.8 in ³)
Compression ratio		18.4:1
Order of injection		1-5-3-6-2-4
Idling speed, low		685 ±50 rpm
Idling speed, high		2375 ±25 rpm
Stall speed transmission		2100 ±35 rpm
Stall speed transmission and hydraulics		2060 ±50 rpm

Document Title: Engine, weight	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Engine, weight

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Engine	
Engine	590 kg (1300 lb)

Document Title: Fuel system, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Injectors, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Injectors	
Type	Multi-nozzle (6 holes)
Opening pressure	22 MPa (220 bar) (3191 psi)
Setting pressure, new spring	23 MPa (230 bar) (3336 psi)
Injection order	1-5-3-6-2-4

Document Title: Fuel tank, volume	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Fuel tank, volume

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Fuel tank	
Capacity, total	208 l (54.9 US gal)
Volume, usable	205 l (54.2 US gal)

Document Title: Fuel feed pump, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Fuel feed pump, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Fuel feed pump	
Type	Rotor pump
Feed pressure	350–500 kPa (3.5–5.0 bar) (50.7–72.5 psi)

Document Title: Lighting, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Lighting, specifications

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Bulbs	Watt	Socket
Headlights, asymmetric	75/70	P 43t - 38 (H4)
Parking light, front	4	BA 9 s
Parking light, rear	10	BA 15 s
Tail lights	10	BA 15 s
Brake lights	21	BA 15 s
Direction indicators, rear	21	BA 15 s
Direction indicators, side	21	BA 15 s
Side running lights	5	SV 8.5
Cab lighting	10	BA 15 s
Instrument lighting	2	BA 9 s
Control light panel	1.2	W 2x 4.6 d
Switches' guide lights	1.2	W 2x 4.6 d
Work lights, front halogen, cab ^(a)	70	PK 22 s (H3)
Work lights, rear halogen, cab ^(a)	70	PK 22 s (H3)
Work lights, front halogen[T1] ⓘ	70	PK 22 s (H3)
Work lights, rear halogen ^(a)	70	PK 22 s (H3)

[T1]Optional equipment.

Document Title: Engine, capacities	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Engine, capacities

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

NOTICE

Stated capacity applies when changing, unless otherwise stated.

Engine	
Engine oil, total	21 dm ³ (5.6 US gal)
Engine oil when changing, incl. filter	20 dm ³ (5.3 US gal)

Document Title: Valve system specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Valve system specifications

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Valve mechanism	
Valve arrangement	Top valves
Valve clearance, warm/cold engine	
Inlet valves	0.30 mm (0.012 in)
Exhaust valves	0.50 mm (0.020 in)

Document Title: Lubrication specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Lubrication system, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Lubrication system	
Oil pressure warm engine, high idle	450-500 kPa (4.5-5.0 bar) (65-72 psi)

Document Title: Fuel tank, volume	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Fuel tank, volume

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Fuel tank	
Capacity, total	208 l (54.9 US gal)
Volume, usable	205 l (54.2 US gal)

Document Title: Injectors, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Injectors, specifications

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Injectors	
Type	Multi-nozzle (6 holes)
Opening pressure	22 MPa (220 bar) (3191 psi)
Setting pressure, new spring	23 MPa (230 bar) (3336 psi)
Injection order	1-5-3-6-2-4

Document Title: Oil-bath precleaner, volume	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Oil-bath precleaner, volume

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Oil-bath precleaner (optional equipment)	
Oil-bath precleaner, volume	5.5 l (1.5 US gal)

Document Title: Intercooler, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Intercooler, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Intercooler	
Type	Air/air

Document Title: Cooling specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Cooling system, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Cooling system	
Type	Closed system
	Hydraulically driven cooling fan
Relief valve in expansion tank cap, opens at:	100 kPa (1 bar) (14.5 psi)

Document Title: Thermostat, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Thermostat, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Thermostat	
Type	Piston thermostat
Quantity	1
Begins to open at	83 °C (181 °F)
Fully open at	95 °C (203 °F)

Document Title: Cooling system, volume	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Cooling system, volume

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Cooling system	
Coolant, total	40 l (10.6 US gal)
Coolant, when changing incl. filter	36 l (9.5 US gal)

Document Title: Cooling fan motor, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Cooling fan motor, specifications

Showing Selected Profile

Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Cooling fan motor	
Type	Piston motor
Rpm at stand-by pressure	approx. 500 rpm
Normal max. rpm with warm machine	Varies between approx. 400–1800 rpm depending on cooling need and equipment
Rpm at pressure test	≥ 1800 rpm.
Displacement	18 cm ³ (1.1 in ³)

Document Title: Cooling fan rpm, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
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Cooling fan rpm, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

With the service display unit the maximum cooling fan speed is set to either of ranges A, B or C, depending on the requirements for cooling engine, charge air, transmission and hydraulic oil.

Base speed for the cooling fan is 400 rpm ±100 rpm for all settings.

If AC is installed, see [Increased fan speed for AC](#)

	Rpm range	Description
A	400–1200 rpm	Noise reduction
B	400–1400 rpm	Sound requirements according to EU
C	400–1800 rpm	Max. cooling

Document Title: Engine, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Engine, tightening torques

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

NOTICE

Regarding bolted joints which are not listed here, see "Volvo standard tightening torques"

Engine mounts	
Engine member – Frame	160 Nm (118 lbf ft) +60°
Flywheel housing – hydraulic transmission	60 Nm (44 lbf ft)
Front engine mount, rubber pads – engine member	85 Nm (63 lbf ft)
Front engine mount, rubber pads – engine mount	85 Nm (63 lbf ft)
Front engine mount, rubber pads – engine block	275 Nm (202 lbf ft)
Engine	
Valve cover	10 Nm (7.4 lbf ft)
Belt pulley: step 1	40 Nm (33 lbf ft)
Belt pulley: step 2, angle tightening	60°
Belt pulley: step 3, angle tightening	60°
Vibration damper	70 Nm (52 lbf ft)

Document Title: Battery, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
Profile: L90E Volvo			

Battery, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Battery	
Total	2 batteries connected in series
Battery disconnect switch (Frame ground connection)	Connected to negative terminal
Voltage	12 V
Battery capacity	2 x 110 Ah

Charge level	Voltage
Fully charged battery	12.7 V
Half-charged battery	12.4 V
Discharged battery	11.6 V and lower

Battery electrolyte density	
Fully charged battery	1.265-1.300 kg/dm ³
The battery must be recharged at	1.250 kg/dm ³

Document Title: Battery, weight	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
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Battery, weight

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Battery	
Weight, incl. electrolyte	21.5 kg (47.4 lb)

Document Title: Electrical specifications	Function Group: system, 030	Information Type: Service Information	Date: 4/19/2026
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Electrical system, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
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Electrical system	
System voltage	24 V



Document Title: Preheating, specifications	Function Group: 030	Information Type: Service Information	Date: 4/19/2026
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Preheating, specifications

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Valid for serial numbers			
Model	Production site	Serial number start	Serial number stop
L90E Volvo			

Preheating coil	
Output	4 kW