

V O L V O



Volvo Wheel Loaders 19.7 - 21.0 t

L120 ELECTRIC

Volvo Construction Equipment

L120 ELECTRIC

A valuable asset for customers looking to maintain maximum efficiency with minimal environmental impact. Reduced maintenance and quiet operation make this 20-tonne electric wheel loader with a 6-tonne payload capacity the perfect partner across a range of applications.



More valuable choice



Achieve your fossil-free ambitions, widen business opportunities and lower your operating costs:

- Access jobsites with low carbon and low noise requirements
- Operate indoors without needing costly fume extraction systems or spark arrestors
- Energy cost reduction
- 30% less maintenance

Safety



Safety of product and operation remains high level, thanks to:

- High ingress protection rating for battery pack (IP68), Master box (IP67), and the Motor (IP69)
- Reinforced structure and optional grille guards for Battery
- Advanced active cooling and heating for battery
- High Voltage Interlock Loop
- Optional Seats with 3 point seat belt, Parking brake alarm, RBB, Radar detect system, CMS, Hill Assist

Powerful, quiet and valuable

The Volvo L120 Electric, a 20-ton wheel loader with a 6-ton payload, matches the powerful performance of equivalent diesel models and operates across multiple segments, while delivering zero emissions and near-silent operation. What's more, thanks to reduced energy expenses and 30% less maintenance, it has lower operating costs and longer uptime to boost productivity.



Runtime and charging

Deliver a full work shift of around 5-9 hours of runtime, depending on the environment, and applications. Stay charged with fast charging options including:

- Charge from 10% to 95% within 90 minutes with selected CCS2 fast DC charger
- Overnight charging from empty to full in 7 hours with selected portable DC charger
- The My Equipment digital tool, ensuring your insights into battery status, machine hours and geographic location



A strong performance

Enjoy the same, or better, power and performance as a conventional model, plus faster response and shorter cycle times thanks to:

- Renowned Branded LFP Battery
- Dedicated, High-Speed Flat-Wire Permanent Magnet Synchronous Motors for propulsion and hydraulics
- Dual thermal system
- Renowned Volvo Torque Parallel linkage
- A range of Volvo Attachments
- Tailored application package
- Customer Build Attachments



Energy recovery function

Electrical drive motors recuperate energy by acting as generators when decelerating:

- Reuse of braking energy to charge the battery and prolong your runtime
- Decreased brake wear
- Reduced need of axle oil cooling.
- Machine can recoup up to 15 % of the energy depending on application



Operator comfort

Enjoy a more comfortable operation with less noise and vibrations. A quieter jobsite facilitates communication and reduces fatigue:

- Suite of Load Assist applications, including On-Board Weighing
- Electro-hydraulic multiple or single lever controls
- Auto bucket leveling functions
- Optional Premium Seats
- Optional Comfort Drive Comfort

Volvo L120 Electric in detail

Electric / Electronic control system

600 V system.		
282 kWh battery pack.		
Electric motor	Permanent-Magnet Synchronous Motor	
Nominal power	kW	228
	hp	310
Battery type	Lithium Iron Phosphate (LFP)	
Battery voltage	V	618
Battery capacity	kWh	282
Battery capacity	Ah	456
Usable battery energy	kWh	254 (90% of battery capacity)
DC Charging capacity	kW	max 165, depends on DC charger power capacity
Charging protocol		CCS2

Electrical System

24 V Electrical system.		
Central warning system: Contronic electrical system with central warning light and buzzer for following functions: - Serious high voltage system fault - Low steering system pressure - Interruption in communication (computer fault) Central warning light and buzzer with the gear engaged for the following functions. - Low transmission oil pressure - High transmission oil temperature - Low brake pressure - Engaged parking brake - Fault on brake charging - High hydraulic oil temperature - Overspeeding in engaged gear - High brake cooling oil temperature front and rear axles - Inverter temperature - Electric motor temperature - Main battery SOC - Main battery discharge warning.		
24 Volt System	V	24
Batteries	V	2 x 12
Battery capacity	Ah	2 x 80

Drivetrain

Transmission: Volvo countershaft transmission with single lever control. Fast and smooth shifting of gears with Pulse Width Modulation (PWM) valve. Transmission: Volvo Automatic Power Shift (APS) with fully automatic shifting 1-4.
Axles: Volvo fully floating axle shafts with planetary hub reductions and nodular iron axle housing. Fixed front axle and oscillating rear axle. 100% differential lock on the front axle. Optional: Limslip rear.

Transmission		Volvo E-TM EHT220
1st gear	km/h	8
2nd gear	km/h	18
3rd gear	km/h	37
4th gear	km/h	40
Measured with tires		23.5R25
Front axle/rear axle		AWB 31 / AWB 30
Rear axle oscillation	±°	13
Ground clearance	mm	430
at oscillation	°	13

Steering System

Steering system: Load-sensing hydrostatic articulated steering.		
System supply: The steering system has priority feed from a load-sensing axial piston pump with variable displacement.		
Steering cylinders: Two double-acting cylinders.		
Steering cylinders		2
Cylinder bore	mm	75
Rod diameter	mm	50
Stroke	mm	486
Working pressure	MPa	26.5
Maximum flow	l/min	74.5
Maximum articulation	±°	38

Cab

Instrumentation: All important information is centrally located in the operator's field of vision. Display for Contronic monitoring system.
Heater and defroster: Heater coil with filtered fresh air and fan with manual setting.
Operator's seat: Operator's seat with adjustable suspension and retractable seatbelt. The seat is mounted on a bracket on the rear cab wall and floor. The forces from the retractable seatbelt are absorbed by the seat rails.
Standard: The cab is tested and approved according to ROPS (ISO 3471, SAE J1040), FOPS (ISO 3449). The cab meets with requirements according to ISO 6055 (Operator overhead protection - Industrial trucks) and SAE J386 ("Operator Restraint System").
 Refrigerant of the type R134a is used when this machine is equipped with air conditioning. Contains fluorinated greenhouse gas R134a, Global Warming Potential 1.430 t CO₂-eq.

Emergency exit: Use emergency hammer to break window

Ventilation	m ³ /min	9
Heating capacity	kW	6
Air conditioning	kW	5.3

Sound Level

Sound level in cab according to ISO 6396 - L _{pA}	dB	70
External sound level (ISO 6395 and EU Noise Directive 2000/14/EC) - L _{WA}	dB	97

Service Refill

Service accessibility: Electrically openable hood with large opening angle giving excellent access to the electric powertrain compartment. A quick-fit adapter on the hydraulic tank provides faster hydraulic oil drainage. Possibility to monitor, log and analyze data to facilitate troubleshooting.		
Hydraulic oil tank	lit	133
Transmission oil	lit	39
Axle oil front	lit	36
Axle oil rear	lit	41

Hydraulic System

System supply: Two load-sensing axial piston pumps with variable displacement. The steering system always has priority.

Valves: Double-acting 2-spool valve. The main valve is controlled by a 2-spool pilot valve.

Lift function: The valve has four positions; raise, hold, lower and floating position. Inductive/magnetic automatic boom kickout can be switched on and off and is adjustable to any position between maximum reach and full lifting height.

Tilt function: The valve has three functions including rollback, hold and dump. Inductive/magnetic automatic tilt can be adjusted to the desired bucket angle.

Cylinders: Double-acting cylinders for all functions

Filter: Full flow filtration through 10 micron (absolute) filter cartridge.

Working pressure maximum, pump 1 for working hydraulic system	MPa	29
Flow	l/min	128
at	MPa	10
pump speed	rpm	1,900
Working pressure maximum, pump 2 for steering-, brake-, pilot- and working hydraulic system	MPa	31
Flow	l/min	128
at	MPa	10
pump speed	rpm	1,900
Working pressure maximum, pump 3 for brake- and cooling fan system	MPa	21
Flow	l/min	32
at	MPa	10
pump speed	rpm	1,900
Pilot system, working pressure	MPa	3.5
Lift	s	5.6
Tilt	s	2.7
Lower, empty	s	3.1
Total cycle time	s	11.4

Lift Arm System

Torque Parallel linkage (TP-linkage) with high breakout torque and parallel movement throughout the entire lifting range.

Lift cylinders		2
Lift cylinder bore	mm	150
Lift cylinder piston rod diameter	mm	80
Lift cylinder stroke	mm	676
Tilt cylinder		1
Tilt cylinder bore	mm	210
Tilt cylinder piston rod diameter	mm	110
Tilt cylinder stroke	mm	412

Brake System

Service brake: Volvo dual-circuit system with nitrogen charged accumulators. Outboard mounted hydraulically operated, fully sealed oil circulation cooled wet disc brakes.

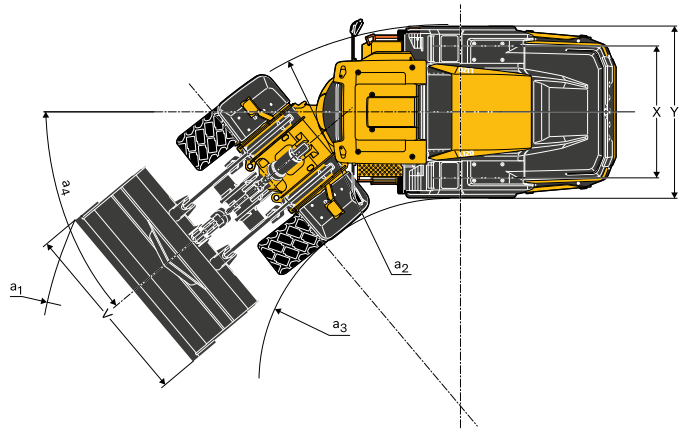
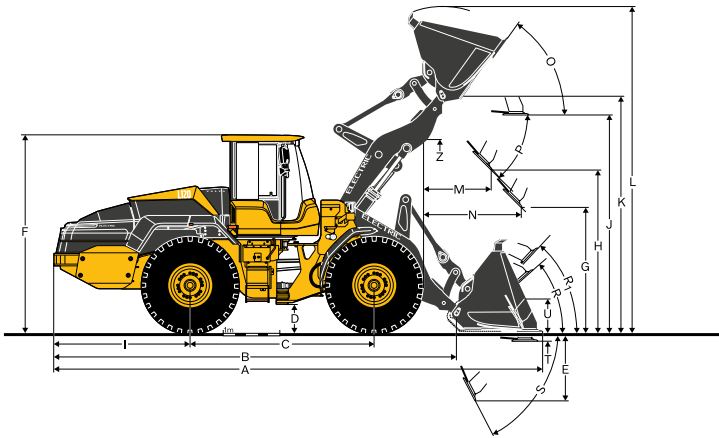
Parking brake: Dry disc brake mounted on the transmission output shaft. Applied by spring force, electro-hydraulically released with a switch on the instrument pane.

Secondary brake: Dual brake circuits with rechargeable accumulators. One circuit or the parking brake fulfills all safety requirements.

Standard: The brake system complies with the requirements of ISO 3450.

Number of brake discs per wheel front		1
Accumulators	lit	3 x 1

Specifications



DIMENSIONS










Tires 23.5 R25 VJT BRIDGESTONE		L120 Electric	
		Standard boom	Long boom
B	mm	6 920	7 405
C	mm	3 200	3 200
I	mm	2 374	2 374
D	mm	430	430
F	mm	3 380	3 375
G	mm	2 135	2 135
J	mm	3 770	4 285
K	mm	4 090	4 610
O	°	54	55
P _{max}	°	50	50
R	°	42	43
R ₁ *	°	47	50
S	°	67	64
T	mm	110	160
U	mm	510	635
X	mm	2 070	2 070
Y	mm	2 680	2 680
Z	mm	3 330	3 705
a ₂	mm	5 740	5 740
a ₃	mm	3 050	3 050
a ₄	±°	40	40

Standard boom with 3.5 m³ STE P BOE bucket
Long boom with 3.5 m³ STE P BOE bucket

* Carry position SAE

Where applicable, specifications and dimensions are according to ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 14397, SAE J818.

L120 Electric

Tires 23.5R25 VJT BRIDGESTONE		GENERAL PURPOSE						RE-HANDLING	LIGHT MATERIAL	LONG BOOM
										
		3.3 m ³ STE P T	3.3 m ³ STE H T	3.5 m ³ STE P T	3.6 m ³ STE P BOE	3.5 m ³ STE H T	3.6 m ³ STE H BOE	3.8 m ³ STE P BOE	5.5 m ³ LM P BOE	3.6 m ³ STE P BOE
Volume, heaped ISO/SAE	m ³	3.3	3.3	3.5	3.6	3.5	3.6	3.8	5.5	3.6
Volume at 110% fill factor	m ³	3.6	3.6	3.9	4.0	3.9	4.0	4.2	6.0	4.0
Static tipping load, straight	kg	15 700	14 960	15 200	14 880	14 500	14 190	14 720	15 460	12 110
at 35° turn	kg	14 030	13 340	13 520	13 220	12 870	12 580	13 060	13 680	10 690
at full turn	kg	13 540	12 870	13 030	12 730	12 390	12 110	12 580	13 160	10 280
Breakout force	kN	172	157	166	170	152	160	151	122	162
A	mm	8 540	8 640	8 570	8 430	8 680	8 540	8 480	8 850	8 930
E	mm	1 370	1 450	1 380	1 270	1 480	1 370	1 310	1 640	1 290
H	mm	2 800	2 730	2 780	2 870	2 700	2 800	2 840	2 560	3 390
L	mm	5 510	5 580	5 560	5 560	5 630	5 630	5 700	5 830	6 080
M	mm	1 340	1 360	1 310	1 220	1 390	1 310	1 260	1 510	1 200
N	mm	1 890	1 870	1 840	1 810	1 880	1 850	1 830	1 890	2 250
V	mm	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000	3 000
a ₁ clearance circle	mm	13 080	13 130	13 100	13 010	13 150	13 070	13 040	13 260	13 470
Operating weight	kg	19 520	19 730	19 560	19 680	19 760	19 890	19 790	20 080	19 940

Bucket Selection Chart

The chosen bucket is determined by the density of the material and the expected bucket fill factor. The actual bucket volume is often larger than the rated capacity, due to the features of the TP linkage, including an open bucket design, good rollback angles in all positions and good bucket filling performance. The example represents a standard boom configuration. Example: Sand and gravel. Fill factor ~ 105%. Density 1.6 t/m³. Result: The 3.4 m³ bucket carries 3.6 m³. For optimum stability always consult the bucket selection chart.

Material	Bucket fill, %	Material density, t/m ³	ISO/SAE bucket volume, m ³	Actual volume, m ³
Earth/Clay	~ 110	1.8	3.3	3.6
		1.6	3.6	3.9
Sand/Gravel	~ 105	1.8	3.3	3.5
		1.7	3.6	3.8
Aggregate	~ 100	1.7	3.8	3.8
Rock	≤ 100	1.7	3.0	3.0

The size of rock buckets is optimized for optimal penetration and filling capability rather than the density of the material.

Type of boom	Type of bucket	ISO/SAE Bucket volume	Material density (t/m ³)							
			L120		Material density (t/m ³)					
			0.8	1.0	1.2	1.4	1.6	1.8	2.0	
Standard boom	Rehandling	P 3.8 m ³								
		H 3.8 m ³								
	General purpose	P 3.3 m ³								
		H 3.3 m ³								
		P 3.6 m ³								
Rock	H 3.6 m ³									
	P 3.0 m ³									
Long boom	Light material	H 5.5 m ³								
		H 9.5 m ³								
	Rehandling	P 3.8 m ³								
		P 3.3 m ³								
		P 3.6 m ³								
Rock	P 3.0 m ³									
	H 5.5 m ³									

Bucket fill
110% 105% 100% 95%
P=Pin-on H=Hook-on

Equipment

STANDARD EQUIPMENT

Traction voltage system

Energy recuperation function with 3 adjustable levels

Motor brake

Hill slow down function

Off board fast DC charging

HVIL function (High voltage Interlock Loop)

High charging power with single charging plug

Active cooling for traction batteries

Preheating of traction voltage battery

Wheels and tires

23.5R25

Drivetrain

Electrical transmission without torque converter

Automatic Power Shift

Fully automatic gear shifting, 1-4

PWM-controlled gear shifting

Forward and reverse switch by hydraulic lever console

Indicator glass for transmission oil level

Differentials: Front, 100% hydraulic diff lock. Rear, conventional

Rimpull control

Electrical system

24 V, pre-wired for optional accessories

Battery disconnect switch with removable key

Battery box, steel

Electric horn

Electric fan

Emergency stop

Rear view mirrors, std arm

Instrument cluster:

SOC level

Traction battery temperature

Energy recuperation level

Transmission oil temperature

Hydraulic oil temperature

Coolant temperature

Instrument lighting

Lighting:

Twin LED front headlights with high and low beams

Parking lights

Double brake and tail lights

Turn signals with flashing hazard light function

LED work lights (2 front and 2 rear)

Headlight bracket, std arm

STANDARD EQUIPMENT

Contronic monitoring system

Monitoring and logging of machine data

Contronic display

Ambient temperature

Clock

Test function for warning and indicator lights

Brake test

Warning and indicator lights:

24 V Battery charging

Parking brake

Warning and display message:

Traction battery temperature

Transmission oil temperature

Transmission oil pressure

Hydraulic oil temperature

Brake pressure

Parking brake applied

Brake accumulator charging

Overspeed at direction change

Axle oil temperature

Level warnings:

SOC level

Coolant level

Transmission oil level

Hydraulic oil level

Hydraulic System

Main valve, double acting 2-spool with hydraulic pilots

Three variable displacement axial piston pumps for:

Working hydraulics, Pilot hydraulics and Brake system

Working hydraulics, Pilot hydraulics, Steering and Brake system

Hydraulic cooling and Brake system

Electro-hydraulic servo controls

Electronic hydraulic lever lock

Automatic boom kick-out

Automatic bucket positioner with position indicator

Double acting hydraulic cylinders

Indicator glass for hydraulic oil level

Hydraulic oil cooler

Secondary steering

Mineral hydraulic fluid

STANDARD EQUIPMENT

Brake system

Dual brake circuits

Single brake pedals

Secondary brake system

Parking brake, electrical-hydraulic

Brake wear indicators

Wet disc brakes on all four wheels

Cab

ROPS (ISO 3471), FOPS (ISO 3449)

Acoustic inner lining

Ashtray

Lockable door

Floor mat

Single interior light

Single interior rear view mirror

Sliding window, right side

Tinted safety glass

Retractable seatbelt (SAE J386)

Adjustable steering wheel

Storage compartment

Document pocket

Sun blinds, front windows

Beverage holder

Windshield washer front

Foot step, left side, rigid (toolbox lockable included)

A/C as standard

Cab heating with fresh air inlet and defroster

Fresh air inlet with two filters

Manual heat control

STANDARD EQUIPMENT

Service and Maintenance

Lubrication manifolds, ground accessible

Pressure test ports: transmission and hydraulic, quick connects

Service platforms with anti-slip surfaces

Toolbox, lockable

Telematics system

MyEquipment

Telematics Subscription

External equipment

Mudguard, rear, basic cover 80 tire

Fender, front, plastic

Viscous cab mounts

Rubber transmission mounts

Frame, joint lock

Electric hood opening

Lifting eyes

Tie-down eyes

Protective equipment

Cover plate, for front frame

Guards for front headlights, no grating

Other equipment

Sound decal, EU

Pin plate with CE-marking

Equipment

OPTIONAL EQUIPMENT

Wheels and tires

Tires MAXAM 23.5-25 TR AP
Tires MAXAM 23.5-25 SM AP
Rims for Bias tire (for 23.5-25)
Rims for Radial tire 25-19.5/2.5 (for 23.5R25)
Tires Advance 23.5R25 GLR02-M3+ *
Tires Advance 23.5R25 GLR08
Tires Aeolus 23.5R25 AL59
Tires Aeolus 23.5R25 AL36**
Tires Bridgestone 23.5R25 VSDL*
Tires Bridgestone 23.5R25 VJT* L3
Tires Michelin 23.5R25 XHA2*
Tires Michelin 23.5R25 XLDN*
Tires Triangle 23.5R25 TL528
Tires Triangle 23.5R25 TL538S**
Tires Triangle 23.5-25/16 TL612. Tube Tire (TT)
Tires Yokohama 23.5R25 RB31*

Electrical system

Extra emergency stop outside Cab
Working lights, front on cab, extra 2 LED lamps
Headlights, assym. left LED
Headlights, assym. right LED
Rear view camera incl. monitor, colour
Volvo Co-Pilot 2nd Generation
Rear view mirrors, el. Heated std arm
Rear view mirrors, Long arm
Rear view mirrors, el. Heated long arm
Warning beacon(flasher), LED
Reverse alarm, audible
Reverse alarm, audible, multi-frequency (white noise)
Side marking lamp
Reverse warning light Strobe
Warning Beacon LED, Automatic
Seat belt indicator, external
Headlight bracket, short arm
Parking brake alarm
Radar detect system
Collision Monitoring System
Tire Pressure Monitoring System
OnBoard Weighing Task Mode
E-WLO Reverse By Braking
Hill Assist
License plate holder, lighting

OPTIONAL EQUIPMENT

Hydraulic System

Boom Suspension System
Separate attachment locking
Mineral oil for cold climate
Hydraulic fluid, for hot climate
Electro-hydraulic function, 3rd
Electro-hydraulic function, 4th
Electro-hydraulic function, 2nd, single lever
Electro-hydraulic function, 3rd, single lever
Electro-hydraulic function, 4th, single lever
Hydraulic constant flow control with detent for 3rd function

Cab

Cab ladder, rubber-suspended
Operator's seat, comfort ISRI, 2 point seat belt
Operator's seat, comfort ISRI, 3 point seat belt
Operator's seat, premium ISRI, 2 point seat belt
Operator's seat, premium ISRI, 3 point seat belt
Arm rest LH for ISRI seats
Cab air pre-cleaner, cyclone type
Left side door, with Sliding window
12 V outlet, right side A-pillar
Sun blinds, rear windows
Footsteps front frame
Foot step, right side
Operator's seat, Volvo air susp, heavy-duty, high back, headrest
Operator's seat, Volvo air susp, heavy-duty, high back, heat, head rest
Radio kit with MP3
Universal door / ignition key USA
Universal door / ignition key, std
Steering wheel knob
Rear wiper
Bracket, for fire extinguisher inside cab

OPTIONAL EQUIPMENT

Service and Maintenance

Automatic lubrication system

Grease nipple guards

Tool kit

Wheel nut wrench kit

Protective equipment

Cover Plates, rear frame

Guards for front headlights, grating

Grill guard for traction battery

Cover plate at CTW, without towing pin

Taillight guards, heavy-duty

Cover plate, under cab

Belly plate - Front frame

Belly plate - Rear frame

Cover plate, heavy-duty, front frame

Center hinge and rear frame guard

Wheel / axle seal guards

Boom cylinder and tube guards

Windshield, guard

Tilt sensor protection

Bucket teeth protection

OPTIONAL EQUIPMENT

External equipment

Fenders, front, steel

Long boom

Deleted front mudguards and wideners rear

Mudguard, rear, full cover 80 tire

Other equipment

Towing hitch

Fast DC charger

Rear windshield wiper

Comfort Drive Control (CDC)

Anchorage OM

Sign, 50km/h

Sign, slow moving vehicle

Waste handler package

Attachments

Buckets:

General purpose (Straight)

Light material

Wear parts:

Bolt-on edge

Bolt-on or weld-on bucket teeth

Segments

Fork equipment

Attachment Bracket VAB cast

Drivetrain

Diff lock front 100%, Limited slip rear

Speed limiter, 20km/h

Speed limiter, 30km/h

Speed limiter, 40km/h

V O L V O