

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.



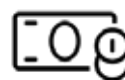
A cleaner, smarter choice



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
- Work outside of standard hours
- Energy cost reduction
- 30% less maintenance

Lower costs and maintenance



The fully electric driveline reduces maintenance time and costs by 30%, increasing machine uptime and profits, thanks to:

- No engine-related consumables
- Maintenance-free electric motors
- Easy service access

High power, low noise

Matching the powerful performance of its diesel equivalent, the L120 Electric is a 20-tonne wheel loader with the added benefit of zero exhaust emissions and a near silent operation. Thanks to a payload capacity of 6 tonnes, it can meet the demands of a range of tasks across segments such as urban infrastructure maintenance, waste and recycling, agriculture, forestry, and ports and logistics centers. What is more, it offers a lower operating cost with an energy cost reduction compared to a diesel driveline. With no engine-related parts, it also ensures 30% reduced maintenance requirements and increased uptime to improve your productivity.



Runtime and charging

Deliver a full work shift of around 5-9 hours of runtime, depending on the environment, across most light and medium duty applications – or operate 2 shifts with charging during breaks:

- Enables charging from 10% to 95% in just 1.5 hours with selected CCS charger and in less than 1 hour with selected GB/T charger, while a 40 kW DC charger provides a complete charge from empty to full in 7 hours for convenient overnight charging
- The PU500 Mobile Power Unit, available to help fully charge in one hour 30 minutes for machines with CCS charging protocol
- The My Equipment digital tool, ensuring your machine is ready for action with valuable 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:

- Dedicated electric motors for propulsion and hydraulics, enabling full available power to both systems and ease operation
- A dual thermal control system securing optimal temperature, efficiency and a good lifetime of components
- Active cooling and heating of high voltage batteries, and passive cooling of electrical motors, transmission and hydraulic oil
- Renowned Torque Parallel linkage ensuring parallel movements and a balanced breakout force
- A range of Volvo 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. Other standard features include:

- Suite of Load Assist applications, including On-Board Weighing
- Electro-hydraulic lever controls, ensuring smooth control and less heat in the cab
- Auto bucket leveling functions

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
	Ah	456
Usable battery energy	kWh	254 (90% of battery capacity)
DC Charging capacity	kW	165 with CCS / 282 with GB/T
Charging protocol		CCS / GB/T

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
Maximum speed, forward/reverse		
1st gear	km/h	8
2nd gear	km/h	18
3rd gear	km/h	37
4th gear	km/h	40
Note: 4th gear limited by ECU		
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 CO ₂ -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 according to ISO 6395 and EU Noise Directive 2000/14/EC		
L _{WA}	dB	99

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	l	133
Transmission oil	l	39
Axle oil front	l	36
Axle oil rear	l	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	r/min	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	r/min	1 900
Working pressure maximum, pump 3 for brake- and cooling fan system	MPa	21
Flow	l/min	32
at	MPa	10
pump speed	r/min	1 900
Pilot system, working pressure	MPa	3.5
Cycle times		
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.

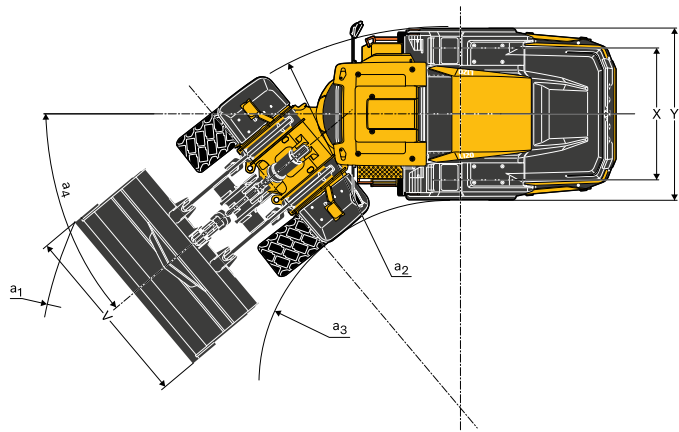
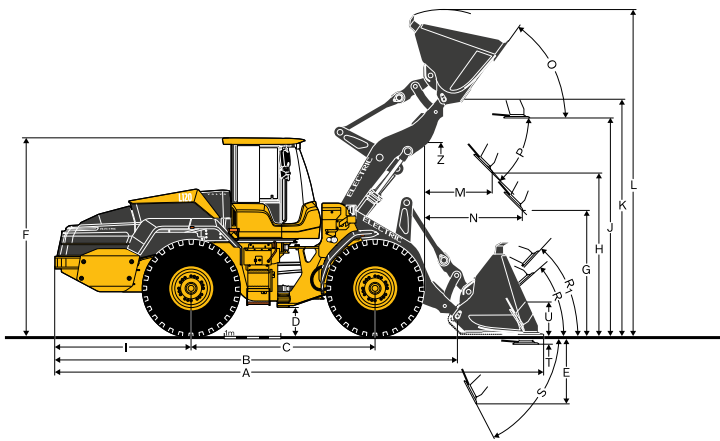
Lift cylinders		2
Cylinder bore	mm	150
Piston rod diameter	mm	80
Stroke	mm	676
Tilt cylinder		1
Cylinder bore	mm	210
Piston rod diameter	mm	110
Stroke	mm	412

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	l	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
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

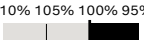
Bucket Selection Chart

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						
			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	Rehandling	H 5.5 m ³							
		H 9.5 m ³							
	General purpose	P 3.8 m ³							
		P 3.3 m ³							
		P 3.6 m ³							
	Rock	H 5.5 m ³							
P 3.0 m ³									

Bucket fill
 110% 105% 100% 95%

 P=Pin-on H=Hook-on

How to read bucket fill factor

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)
 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

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)

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

STANDARD EQUIPMENT

Hydraulic System

Main valve, double acting 2-spool with hydraulic pilots
 Three variable displacement axial piston pumps for:
 Working hydraulics,
 Working hydraulics, steering system, brakes
 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

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 (toolbox lockable included)
 A/C as standard
 Cab heating with fresh air inlet and defroster
 Fresh air inlet with two filters
 Manual heat control

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 application
 Telematics Subscription

External equipment

Fenders, front and rear, plastic
 Viscous cab mounts
 Rubber transmission mounts
 Frame, joint lock
 Electric hood opening
 Lifting eyes
 Tie-down eyes

OPTIONAL EQUIPMENT

Traction voltage system

CCS DC single gun charging
GB/T DC dual gun charging

Wheels and tires

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, 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
Headlights, front, guards, grating
Warning beacon(flasher), LED
Reverse alarm, audible
Reverse alarm, audible, multi-frequency (white noise)

Hydraulic System

Boom Suspension System
Separate attachment locking, standard boom
Separate attachment locking, long boom
Mineral oil for cold climate
Hydraulic fluid, for hot climate
Electro-hydraulic function, 3rd
Electro-hydraulic function, 3rd for long boom

OPTIONAL EQUIPMENT

Cab

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

Service and Maintenance

Automatic lubrication system
Automatic lubrication system for long boom
Grease nipple guards
Refill pump for grease to lube system
Tool kit
Wheel nut wrench kit

Protective equipment

Cover Plates, rear frame
Guards for headlights, front, grating
Guards for headlights, front, no grating
Grill guard for traction battery
Cover plate at CTW, without towing pin
Cover plate, for front frame

External equipment

Fenders, front and rear, steel
Long boom

Other equipment

Sound decal, EU
Pin plate with CE-marking
Pin plate without CE-marking
Towing hitch
Fast DC charger
Rear windshield wiper

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





V O L V O