

VOLVO WHEEL LOADER

L150E, L180E, L220E

DOWNLOAD SERVICE MANUAL



VOLVO

POWERFUL, DEPENDABLE AND EASY TO OPERATE

Volvo L150E, L180E and L220E: High power, dependability, and ease of operation credited to the new generation of Volvo engineered and manufactured engines. Using all-new technology, these machines meet the full range of modern environmental legislation, at the same time delivering high productivity and low fuel consumption; moving more material with less fuel than any other wheel loader on the market.

Entirely new generation of Volvo engines

The new machines are the result of Volvo's constant drive to remain one step ahead of our competitors, to always fulfill our customers' wishes and demonstrate our care for the environment. The new machines are equipped with an entirely new generation of Volvo engines. They utilize every single drop of fuel, provide full power from idling speed, and meet the tougher new demands on reduced emissions. Together with the fully automatic transmission, the load-sensing hydraulic system, Volvo's patented TP Linkage and the highly comfortable Volvo Care Cab, you get machines that are as strong and cost-effective as they are driver-friendly and easy-to-operate.

Fast and comfortable work cycles

Since Volvo develops both engines and machines in-house, optimum performance is achieved in all applications. The operator has a smooth and maneuverable machine that ensures low noise levels while the low-emission engine promotes low fuel consumption allowing higher productivity at the end of the shift.

The interaction between the high-torque engine and the automatic transmission promotes fast response in all situations. At the same time, the steering system permits gentle and precise manoeuvring. With TP Linkage, our wheel loaders penetrate even the most demanding material, and the high breakout force and penetration make it very easy to fill the bucket. This promotes fast and comfortable work cycles.

	Specifications L150E	Specifications L180E	Specifications L220E
Engine	Volvo D12D LD E3 Stage III A/Tier 3	Volvo D12D LA E3 Stage III A/Tier 3	Volvo D12D LB E3 Stage III A/Tier 3
Max power at	23,3–28,3 r/s (1,400–1,700 rpm)	23,3–26,7 r/s (1,400–1,600 rpm)	26,7 r/s (1,600 rpm)
SAE J1995 gross	210 kW (286 hp)	235 kW (320 hp)	261 kW (355 hp)
ISO 9249, SAE J1349 net	209 kW (284 hp)	234 kW (318 hp)	259 kW (352 hp)
Breakout force:	184,7 kN* (41,522)*	214,7 kN** (48,266)**	224,5 kN*** (50,470)***
Static tipping load at full turn:	15 150 kg* (33,400)*	18 130** (39,970)**	20 660 kg*** (45,550)***
Buckets:	3,1–12,0 m ³ (4.1–15.7 yd³)	3,7–14,0 m ³ (5.0–18.3 yd³)	4,5–14,0 m ³ (5.9–18.3 yd³)
Log grapples:	1,6–3,5 m ² (17.2–37.7 ft²)	1,6–3,7 m ² (17.2–39.8 ft²)	1,7–4,0 m ² (18.3–43.1 ft²)
Operating weight:	23,0–26,0 t (50,710–57,320 lb)	26,0–29,0 t (57,320–63,930 lb)	31,0–33,0 t (68,340–72,750 lb)
Tires:	26.5 R25 775/65 R29	26.5 R25 775/65 R29	29.5 R25 875/65 R29

* Bucket: 4,0 m³ (5.2 yd³) straight edge with bolt-on edges, tires 26.5 R25 L3, standard boom.

** Bucket: 4,6 m³ (6.0 yd³) straight edge with bolt-on edges, tires 26.5 R25 L3, standard boom.

*** Bucket: 5,4 m³ (7.1 yd³) straight edge with bolt-on edges, tires 29.5 R25 L4, standard boom.





THREE OF THE WORLD'S MOST PRODUCTIVE AND PROFITABLE WHEEL LOADERS

Not only are the Volvo L150E, L180E and L220E the most productive loaders on the market, they are also three of the most cost-effective in existence. There are several reasons: Volvo's renowned dependability, excellent financing packages, high fuel efficiency, high residual value and minimal service requirement. All three loaders are focused on reducing costs and increasing productivity to deliver unparalleled profitability — both now and in years to come.

L150E – flexible and quick

The Volvo L150E is a lively, economical and versatile production loader. It is excellent for loading trucks, feeding crushers, earthmoving and timber handling. Our comprehensive range of attachments and the machine's efficiency make this a flexible production loader that is built to handle the toughest of operations.

The L150E is a pleasure to operate. It is both powerful and nimble, and the powerful new engine responds instantly to your commands.

L180E – both agile and sturdy

The Volvo L180E is an outstandingly robust and powerful loader, perfect for tough operations both before and after the crusher. It is also dynamic, agile and easy-to-operate, making it equally effective for loading and moving material. Its high breakout torque, the fast-responding hydraulics, the swift, precise movements and the low fuel consumption make it the most productive loader in its class.

The L180E also has one of the market's highest breakout torque at the top of the lift range, making it an excellent timber handler for quickly and efficiently unloading a timber truck.

L220E – more power and higher productivity

The Volvo L220E is an extremely powerful and easy-to-operate machine, the obvious choice if you want to move as much material as possible, as quickly and cheaply as possible.

The L220E excels at loading shot rock. With Volvo's TP Linkage, it easily forges ahead into even the most demanding material. Breakout torque and penetration ability are impressive, making it very easy to fill the bucket.





THE ART OF MOVING GRAVEL AND MOUNTAINS AS QUICKLY AND CHEAPLY AS POSSIBLE

Volvo wheel loaders provide you a way to move more tons per hour; a powerful engine combined with the fully automatic transmission that gives instant response at even the lowest engine speed. Under the most demanding conditions, Volvo's in-house manufactured driveline always promotes maximum pulling power when and where it's needed most. The result? The highest productivity and lowest cost per ton available anywhere.

Rapid response means higher productivity and lower operating costs

With Volvo's new generation of engines, our wheel loaders provide alert response even from really low rpm. Even at idling speed, no less than 92% of maximum torque is available. The machine responds quickly and powerfully, resulting in excellent pulling power, low fuel consumption and minimum emissions. This together with the engine's long service life promotes unsurpassed productivity and profitability.

Automatic shifting with an eye on both engine revs and ground speed

Volvo's Countershaft transmission provides smooth and effective gear shifting in all gears. All the operator has to do is to select forward or reverse – the Automatic Power Shift (APS) automatically selects the right gear to suit current engine revs and ground speed.

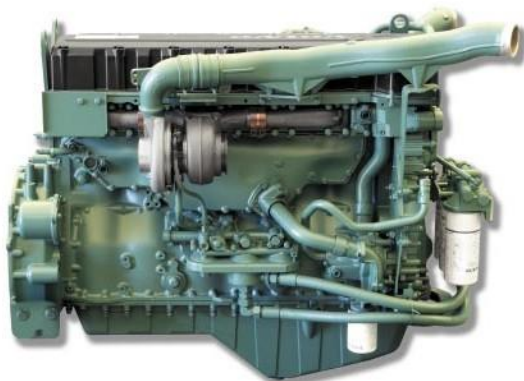
Volvo's axles keep the machine firmly on the ground

Volvo's in-house engineered axles and drivetrain are tailor-made to suit each other and dimensioned to provide top dependability. The front axle features a hydraulically operated 100% differential lock. On the L220E the rear axle is mounted in a maintenance-free axle housing cradle, which means the operator does not have to carry out lubrication and there is no downtime in operation.

Gentle and powerful brakes

The Volvo L150E, L180E and L220E are all equipped with Volvo's hydraulically-operated, circulation-cooled wet disc brakes. This system is both powerful and gentle in operation, while ensuring long service life.

For extremely hot and demanding conditions, the machine can also be equipped with external axle oil cooling*, which makes brake cooling even more effective. What is more, the oil is filtered, which considerably extends the service interval.



Engine

- The Volvo D12D is a turbocharged low-emission engine with an air-to-air intercooler and electronically-controlled fuel injection, an overhead camshaft and four valves per cylinder – a package that provides extremely high torque from low engine rpm.
- The engine's computer system communicates with the other on-board systems to ensure the best possible interaction.
- This makes for optimum performance with faster response, lower fuel consumption and faster work cycles.
- The electronically-controlled hydrostatic fan operates only when required, which saves fuel.

Transmission

- Volvo's enhanced, tried and tested torque converter and the electronically-controlled engine provide unparalleled hill-climbing properties.
- With the 3rd generation Volvo APS, the operator can choose between four different gear shifting programs, including the new AUTO function, which adjusts to suit current conditions and selects the most effective gear changing program for the job at hand, with regard to both the operator's driving style and the work cycle.
- The 3rd generation Volvo APS features Fully Automatic Power Shift 1–4, which means the operator only has to choose between forward and reverse.

Axles

- Two-level warning for high axle oil temperature provides effective component protection and longer service life.
- 100% lockable differential lock is standard on the front axle, giving the best possible traction even in difficult ground conditions.
- Lubricated-for-life rear axle bearings require no additional greasing, which promotes higher uptime and longer service life (applies only to the L220E).

Brakes

- Fully hydraulic twin-circuit system for increased safety.
- Circulation-cooled wet disc brakes ensure efficient braking and provide long service life.
- Electronic brake test in Contronic provides information about the condition of the brakes.
- Brake-wear indicator on each wheel for simple monitoring of brake lining wear.
- Automatic application of parking brake if pressure is too low.

* Optional equipment



PRECISION ALLIED TO POWER

Torque-Parallel Linkage, load-sensing hydraulics, light steering and stability allows the operator equal measures of precision and power. The load-sensing hydraulic system ensures that hydraulic oil is pumped around the system only when and where it's needed. This means greater efficiency and lower fuel consumption.

Superior breakout torque throughout the lifting range

Volvo's unique, patented and highly reliable TP Linkage lifting arm system provides optimum breakout torque and excellent parallel action throughout the lifting range. The system is remarkably easy-to-operate and the driver can efficiently handle heavy materials with full power and control at all attachment positions.

Load-sensing hydraulic system

Volvo wheel loaders are equipped with an intelligent load-sensing hydraulic system. Two variable piston pumps provide exactly the flow rate and pressure required at any given moment in time, distributing the power to where it is needed, when it is needed. When no flow is required in the hydraulic system, all engine power is diverted to the driveline. In addition to quick response, this system provides smoother operation, lower fuel consumption and more precise control over the machine and load, even at low engine revs. You always get the same power, irrespective of revs.

Easy-to-operate precision steering

The steering is light and precise, even at low revs. The load-sensing hydrostatic steering system is activated only when the steering wheel is turned. This results in a highly efficient system where no fuel and no power are used unless necessary.

Long wheelbase gives smooth progress and reassuring stance

The long wheelbase makes our wheel loaders smooth and stable, even on uneven surfaces. Volvo's comfortable Boom Suspension System, BSS* with its gas/oil accumulators, absorbs shocks and boosts productivity by up to 20%.

TP Linkage

- Unique patented lifting arm system that provides two solutions and benefits in one: Excellent breakout torque and excellent parallel action throughout the lifting range.
- Intelligent, compact geometry keeps the bucket close to the machine and promotes superb stability in tasks involving loading, carrying and transporting.

Load-sensing hydraulic system

- The load-sensing hydraulic system ensures that hydraulic oil is pumped around the system only when and where it's needed. This means greater efficiency and lower fuel consumption.
- Pilot-operated hydraulics allow precise control of the attachments, making life easier, and safer, for the operator.
- Volvo's comfortable Boom Suspension System (BSS)* increases machine stability in all applications and promotes faster, more comfortable work cycles with less waste. It also increases productivity by up to 20%.

Steering

- Load-sensing steering only utilises power when it is needed, which saves fuel.
- E-series loaders feature an accumulator system, providing stable, smooth steering and greater safety.
- With the optional Comfort Drive Control (CDC)* you can handle steering and gearchanging conveniently via handy controls fitted in the left-hand armrest.

Frame

- Rugged frame design for secure mounting of components reduces vibration and increases service life.
- A long wheelbase permits more stable progress, which further improves capacity for fast and comfortable work cycles.
- The three-point mounting of the engine and transmission in the E-series promotes a low noise level and less vibration.
- Volvo's frame steering is a tried and tested concept that is very service-friendly and renowned for its long service life.

* Optional equipment



ONLY A SATISFIED OPERATOR IS A PRODUCTIVE OPERATOR

Volvo Care Cab reinforces Volvo's reputation as a leader in operator environments and cab comfort. We never forget the operator inside the machine. A comfortable, operator-friendly and safe environment makes the workday easier and more productive.

A clean and pleasant workplace

A good in-cab climate is a precondition for the driver to stay alert and remain efficient throughout long shifts. Volvo offers by far the market's cleanest cab environment, thanks to our filter system where all air entering the cab is filtered twice. And with the stepless controls, you can choose to recirculate already tempered air instead of taking in all the air from outside. In truly dusty conditions, you can choose to go down to taking just 10% of air from the outside, instead of the usual 100% as in the case of our competitors.

Volvo's powerful air-conditioning* provides a pleasant temperature year-round, regardless of outdoor conditions.

A comfortable workplace

We have a large number of comfortable seats to choose between, all with a wide variety of adjustment scope for best possible individual comfort. All the instruments are easy to overview and all the important information is gathered together in front of the driver. Forward and reverse control is duplicated in both the lever on the left of the steering wheel and in the hydraulic system lever console on the right.

* Optional equipment

Thanks to Comfort Drive Control (CDC)* the driver can handle the steering and forward/reverse shifts via convenient controls in the left-hand armrest. This is an excellent way to avoid repetitive movements and static muscular tension. In order to avoid monotonous movements, the driver can at any time switch between lever and steering wheel control.

A quiet workplace

Thanks to the ingenious cab suspension with its viscous cab elements and the effective sound insulation, the Volvo Care Cab is one of the quietest cabs on the market. Owing to the reduction of disruptive noise and annoying vibration, the driver is less tired by the end of his shift.



Care Cab

- Unbeatable driver's environment with one of the market's best in-cab air filtration systems.
- Pleasant interior with first-class finish. Simplifies maintenance and makes it easy to keep things clean.
- Adjustable seat, armrest, hydraulic lever console and steering wheel for optimum driver comfort and high production.
- All the service platforms and foot-steps feature improved anti-slip surfaces. Angled steps for better entry access.
- Standard-equipped with viscous cab mountings made of silicone and rubber to dampen cab vibration and increase driver comfort.
- Large windows, slim pillars and a sloping engine compartment cover provide good all-round vision, which contributes to even higher safety.
- Large laminated windscreen enhances safety.
- Visibility-optimised TP linkage provides unobstructed view of the attachments.
- Powerful halogen lights front and rear provide a uniform spread of light and good visibility over the entire working area.



FAST SERVICE FOR MAXIMUM UPTIME

Wheel loader applications are demanding and most of the time this demand is around the clock every day of the year. Volvo provides warranties and service systems tailored to your particular machine and suited to the toughest imaginable operating conditions - reducing downtime and maximizing uptime to produce more over the life of the machine.

Service-friendliness means more time over for productive work

We assist you in your daily maintenance by providing simple and quick electronic checks of oil and fluid levels. What is more, all the filters and service points are easily accessible. All the hatches are large and easy-to-open. Hydraulic couplings and quick-release connectors are gathered conveniently together for fast and simple inspection.

Contronic takes control

The machine's operation and performance are regulated and monitored by Volvo Contronic, a built-in and highly reliable electronic network consisting of three computers. The system works on three levels.

Level 1: The system keeps an eye on the machine's functions in real-time. Should a potential problem occur, Contronic alerts the operator instantly. A service technician can then connect his Contronic service tool to the system and trace the fault on the spot.

Level 2: All operational data is stored and can be used to analyze the machine's performance and trace its history since the most recent service. This information is then presented in the Machine Tracking Information System (MATRIS), providing valuable information for fault tracing and service measures.

Level 3: The machine's functions can be optimised according to changes in working conditions via the Contronic service display. Thanks to the VCADS Pro analysis and programming tool, the machine's functions and performance can be monitored and adapted to suit changing conditions.



MATRIS stores operational data and shows how the machine is working. This provides valuable information for fault-tracing and service.

Contronic electronic monitoring system

- Overriding computerized electronic and monitoring system, dependable and easy-to-use.
- Coordination of reliable engine and machine computers for optimum performance and safety.
- Display information in three categories – current operating data, warning texts and error messages.
- Available in 13 languages, monitors fuel consumption, cycle times and service intervals.
- Electronic checking of important oil and fluid levels from inside the cab simplifies daily inspections and increases operating reliability.
- The system has built-in safety functions that automatically limit the engine's torque and power output in the event of major faults so as to protect the engine and transmission and thus reduce the risk of consequential damage.

Maintenance and uptime

- Electronic monitoring of fluid levels simplifies and reduces the time needed for daily inspections, and enhances reliability.
- Long lubrication intervals means more time for productive work.
- Contronic alerts the operator if there are problems and provides a diagnosis for relevant action.
- Suitably designed steps and platforms and well-positioned grab-handles make for safe and convenient service.
- Breather filter provides component protection for the transmission, axles, fuel tank and hydraulic tank.
- Volvo's oil-bath pre-filter* in combination with the standard air filter is far more effective in dusty and dirty operating conditions.
- Easily accessible hatches and service points make service easier.

* Optional equipment



COMMITMENT TO MANKIND AND NATURE

Quality, safety and environmental care are Volvo's core values. We regard our commitment to the environment as a natural part of our entire operation, whose goal is maximum productivity and efficiency at the lowest cost, and with the least possible effect on the environment. Volvo's customers get one of the market's cleanest and most reliable wheel loaders.

Powerful, dependable and environmentally optimised

With the new generation of diesel engines, Volvo has taken yet another giant stride forward to reduce emissions, without any dramatic changes that reduce engine power. This is possible thanks to the new V-ACT (Volvo Advanced Combustion Technology). The system's secret lies in its advanced method of fuel injection, its enhanced electronic control of engine operation and its smart system for exhaust gas recirculation. The new engine generation makes the L150E, L180E and L220E more environmentally optimised, without affecting fuel consumption.

More than 95% recyclable

Volvo wheel loaders are almost entirely recyclable. Components such as the engine, transmission and hydraulic system are re-engineered and reused in our Parts Exchange Programme. For us, this is an obvious and natural part of our undertaking.

Quality

- Air from all the major components is vented via easy to replace filters, preventing dirty air from entering the transmission, axles, fuel tank and hydraulic tank.
- High-quality components for demanding environments, including Volvo's renowned articulated frame with a bearing design known for its long service life.
- All electrical cables are well protected against water, dirt and chafing, routed in sturdily attached conduits with rubber-encapsulated connectors and terminal caps. All the most vital components are well protected inside the cab.
- Volvo wheel loaders are designed for simple service and maintenance. Easily accessible components form the basis for shorter service and maintenance downtime and longer service life.

Safety

- Twin circuit wheel braking system that meets all the ISO 3450 requirements, electronic brake testing in Contronic and simple inspection via wear indicators contribute to guaranteed safe and effective brake function.
- The parking brake is activated automatically when the engine is switched off, this guarantees that the machine is always braked when it is parked.
- The Volvo Care Cab has been tested and approved according to the requirements in ROPS ISO 3471 and FOPS ISO 3449.
- Warning signs offer clear information in the form of symbols and illustrations.
- Excellent all round visibility gives effective control over the entire working area.
- Sloping engine compartment cover gives better visibility to the rear.
- Volvo wheel loaders have steps and platforms treated with an anti-slip surface, as well as well positioned hand rails.

The environment

- The low revving, high-performance D12D engine meets all existing emissions requirements according to stage III A regulations in Europe and Tier 3 in the USA.
- Volvo wheel loaders are manufactured in environmentally certified factories according to ISO 14001.
- The load-sensing hydraulic system contributes to low fuel consumption.
- Volvo wheel loaders are more than 95% recyclable, calculated per vehicle weight.
- Low interior and exterior noise levels.



VOLVO GENUINE ATTACHMENTS – FOR A PERFECT MATCH

Volvo genuine buckets and wear parts are built to the same quality standard as our wheel loaders. As a machine manufacturer, we have both the knowledge and information to design our attachments as an integral part of the loader. Machines and attachments that are made for each other obviously work best together.

Wide range of attachments

Volvo offers a wide range of attachments and wear parts, including the new Volvo Tooth System. Volvo genuine attachments are designed for all types of applications, from handling timber to breaking out hard and rocky materials, such as shot rock.

Side cutters with extra hardened and tempered steel wear plates provide high abrasion resistance (up to 500 Brinell)

Bucket shell and side plates (up to 400 Brinell)

Reinforced load transition structures reduce wear and increase useful life

Base cutting edge manufactured from abrasion resistant steel (500 Brinell)

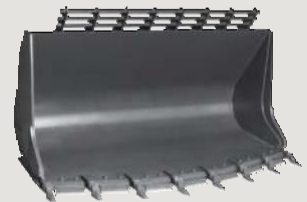
Replacable bolt-on bottom wear plates (500 Brinell)

Bolt on edge savers and segments help protect the cutting edge from excessive wear (500 Brinell)

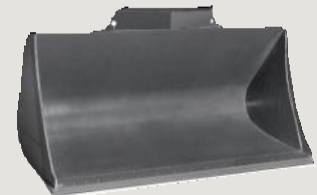
Volvo Tooth System with bolt on or weld on adapters for excellent penetration and reduced bucket wear (up to 515 Brinell)



Standard bucket with teeth



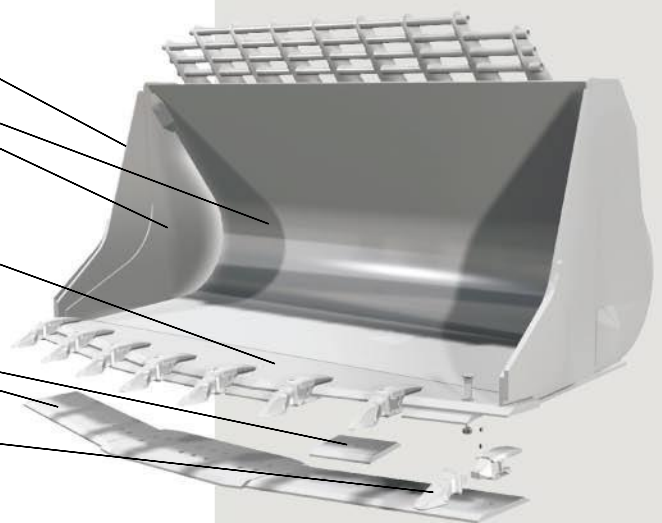
Spade nose rock bucket with teeth



Standard bucket with edge savers



Timber grapple/Sorting grapple



WHATEVER THE JOB, WE HAVE THE TOOLS TO GET IT DONE – VOLVO OPTIONAL EQUIPMENT

Boom Suspension System (BSS)*



Comfort Drive Control (CDC)*



Automatic Lubrication System*



3rd and 4th hydraulic functions*



Volvo offers a full range of equipment that has been specifically designed for your business. You pick the options that are right for you and your application to increase productivity, economy, comfort, serviceability and safety.

Selection of Volvo optional equipment.

Boom Suspension System (BSS)* BSS effectively absorbs shocks and reduces the bouncing and rocking that often occurs when operating on rough ground. Volvo's Boom Suspension System offers two different operating modes for faster cycle times, higher productivity and improved operator comfort in all types of extraction applications.

Comfort Drive Control (CDC)* When operating with CDC, there is a significant reduction of repetitive and tiring steering wheel movements. Comfort Drive Control provides comfortable operation of steering and shifting with user-friendly controls integrated in the left armrest. CDC is especially effective in short cycle loading applications, where continuous operation with the steering wheel can cause fatigue and static muscle strain.

Automatic lubrication system* Volvo's factory mounted central lubrication system automatically lubricates service points on the machine so you don't have to. Uniform application of lubricant ensures that the lubrication points always have the correct amount of grease. It cuts maintenance costs and downtime, which means higher productivity and reduced operating costs.

3rd and 4th hydraulic functions*

Volvo wheel loaders can be equipped with third and fourth hydraulic functions, which are operated with additional control levers.

These functions are necessary when there's a need to operate a third and fourth hydraulic function at the same time; such as when using a timber grapple with hydraulic heel kick-out.

* Optional equipment

THE VOLVO L150E, L180E, L220E IN DETAIL

Engine

12 liter, 6-cylinder straight turbocharged diesel engine with four valves per cylinder, overhead camshaft and electronically controlled unit injectors. The engine has wet replaceable cylinder liners and replaceable valve guides and valve seats. The throttle application is transmitted electrically from the throttle pedal or the optional hand throttle. Air cleaning: three-stage. Cooling system: Air-to-air intercooler and hydrostatic, electronically-controlled fan.

L150E

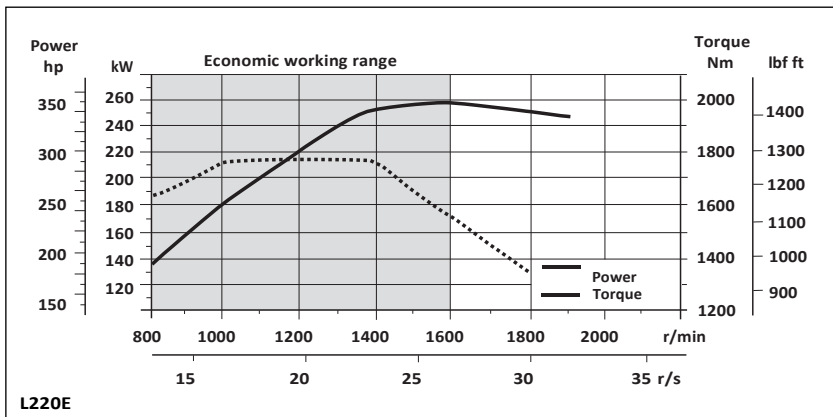
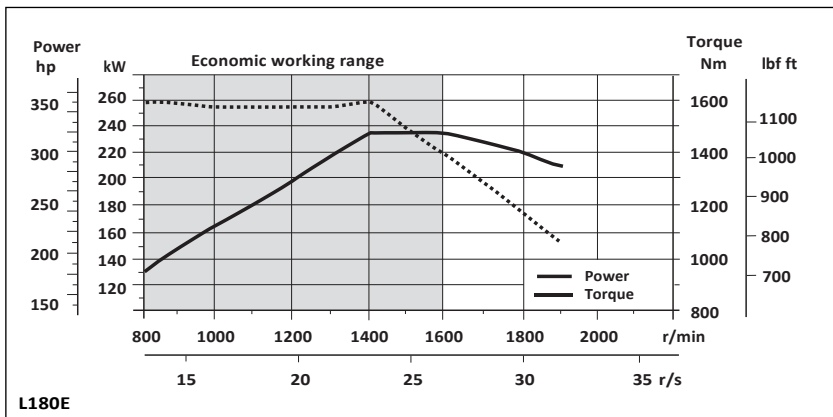
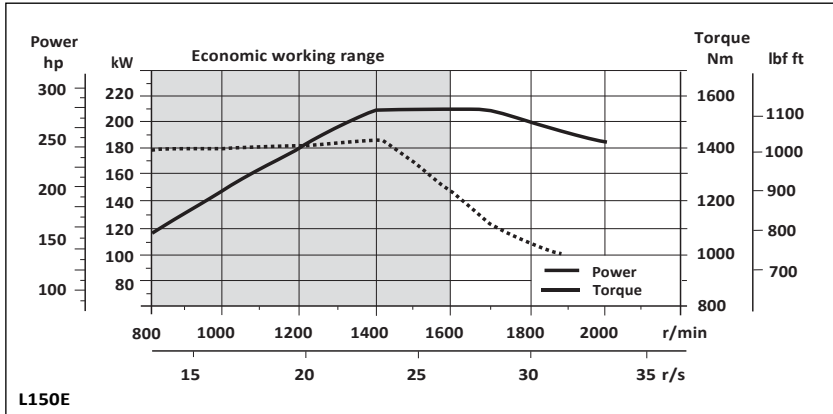
Engine	Volvo D12D LD E3
Max power at 23,3–28,3 r/s (1,400–1,700 rpm)	
SAE J1995 gross	210 kW (286 hp)
ISO 9249, SAE J1349	209 kW (284 hp)
Max torque at	23,3 r/s (1,400 rpm)
SAE J1995 gross	1432 Nm (1,056 lbf ft)
ISO 9249, SAE J1349	1423 Nm (1,050 lbf ft)
Economic working range	800–1,600 rpm
Displacement	12 l (732 in ³)

L180E

Engine	Volvo D12D LA E3
Max power at 23,3–26,7 r/s (1,400–1,600 rpm)	
SAE J1995 gross	235 kW (320 hp)
ISO 9249, SAE J1349	234 kW (318 hp)
Max torque at	23,3 r/s (1,400 rpm)
SAE J1995 gross	1603 Nm (1,182 lbf ft)
ISO 9249, SAE J1349	1594 Nm (1,176 lbf ft)
Economic working range	800–1,600 rpm
Displacement	12 l (732 in ³)

L220E

Engine	Volvo D12D LB E3
Max power at	26,7 r/s (1,600 rpm)
SAE J1995 gross	261 kW (355 hp)
ISO 9249, SAE J1349	259 kW (352 hp)
Max torque at	23,3 r/s (1,400 rpm)
SAE J1995 gross	1765 Nm (1,302 lbf ft)
ISO 9249, SAE J1349	1756 Nm (1,295 lbf ft)
Economic working range	800–1,600 rpm
Displacement	12 l (732 in ³)





Electrical system

Central warning system: Central warning light for the following functions, (buzzer with gear engaged): Engine oil pressure, charge-air temperature, transmission oil pressure, brake pressure, parking brake applied, hydraulic oil level, steering pressure, low coolant level, coolant temperature, transmission oil temperature, hydraulic oil temperature, overspeeding in engaged gear, brake charging, axle oil temperature, crankcase pressure.

L150E, L180E, L220E

Voltage	24 V
Batteries	2x12 V
Battery capacity	2x140 Ah
Cold cranking capacity, approx	1050 A
Reserve capacity, approx	285 min
Alternator rating	1540 W/55 A
Starter motor output	7,0 kW (9,5 hp)

Drivetrain

Torque converter: single-stage.
Transmission: Volvo countershaft transmission with single lever control. Fast and smooth shifting of gears between forward and reverse with Pulse Width Modulation (PWM) valve. Gearshifting system: Volvo Automatic Power Shift (APS) with Fully Automatic Power Shift 1-4 and mode selector with four different gearshifting programs, including AUTO. Axles: Volvo fully floating axle shafts with planetary hub reductions and nodular iron axle housings. Fixed front axle and oscillating rear axle. 100% differential lock on the front axle.

L150E

Transmission	Volvo HTE 210
Torque multiplication	2,4:1
Maximum speed, forward/reverse	
1	6,8 km/h (4.2 mph)
2	12,9 km/h (8.0 mph)
3	26,8 km/h (16.7 mph)
4	41,9 km/h (26.0 mph)
Measured with tires	26.5 R25 L3
Front axle/rear axle	Volvo/AWB 40B/40C
Rear axle oscillation	±15°
Ground clearance at 15° osc.610 mm (24.0 in)	

L180E

Transmission	Volvo HTE 220
Torque multiplication	2,1:1
Maximum speed, forward/reverse	
1	6,6 km/h (4.1 mph)
2	12,3 km/h (7.6 mph)
3	25,3 km/h (15.7 mph)
4	38,1 km/h (23.7 mph)
Measured with tires	26.5 R25 L3
Front axle/rear axle	Volvo/AWB 40B/40B
Rear axle oscillation	±15°
Ground clearance at 15° osc.610 mm (24.0 in)	

L220E

Transmission	Volvo HTE 305
Torque multiplication	2,1:1
Maximum speed, forward/reverse	
1	6,9 km/h (4.3 mph)
2	11,1 km/h (6.9 mph)
3	22,9 km/h (14.2 mph)
4	34,6 km/h (21.5 mph)
Measured with tires	29.5 R25 L3
Front axle/rear axle	Volvo/AWB 50/41
Rear axle oscillation	±15°
Ground clearance at 15° osc.600 mm (24.0 in)	

Brake system

Service brake: Volvo dual-circuit system with nitrogen charged accumulators. Outboard mounted hydraulically-operated, fully sealed oil circulation-cooled wet disc brakes. The operator can select automatic disengagement of the transmission when braking using Contronic. Parking brake: Fully sealed, wet multi-disc brake built into the transmission. Applied by spring force and electro-hydraulically released with a switch on the instrument panel. Secondary brake: Dual brake circuits with rechargeable accumulators. Either one circuit or the parking brake fulfills all safety requirements. Standard: The brake system complies with the requirements of ISO 3450.

L150E, L180E

Number of brake discs per wheel front/rear	1/1
Accumulators	2x1,0 l (2x0.26 US gal) 2x0,5 l (2x0.13 US gal)
Accumulators for parking brake	1x0,5 l (1x0.13 US gal)

L220E

Number of brake discs per wheel front/rear	2/1
Accumulators	2x1,0 l (2x0.26 US gal) 1x0,5 l (1x0.13 US gal)
Accumulators for parking brake	1x0,5 l (1x0.13 US gal)

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.

L150E

Steering cylinders	2
Cylinder bore	90 mm (3.54 in)
Piston rod diameter	50 mm (1.97 in)
Stroke	423 mm (16.65 in)
Working pressure	21 MPa (3,046 psi)
Maximum flow	190 l/min (50.2 US gpm)
Maximum articulation	±37°

L180E

Steering cylinders	2
Cylinder bore	100 mm (3.94 in)
Piston rod diameter	50 mm (1.97 in)
Stroke	418 mm (16.46 in)
Working pressure	21 MPa (3,046 psi)
Maximum flow	190 l/min (50.2 US gpm)
Maximum articulation	±37°

L220E

Steering cylinders	2
Cylinder bore	100 mm (3.94 in)
Piston rod diameter	60 mm (2.36 in)
Stroke	502 mm (19.76 in)
Relief pressure	21 MPa (3,046 psi)
Maximum flow	234 l/min (61.8 gpm)
Maximum articulation	±37°

Cab

Instrumentation: All important information is centrally located in the operator's field of view on the Contronic monitoring system's display unit. Heater and defroster: Heater coil with filtered fresh air and fan with four speeds. Defroster vents for all window areas. Operator seat: Ergonomic seat with adjustable suspension and retractable seat belt. The seat is mounted on a bracket, which is mounted on the rear cab wall. The forces from the retractable seat belt are absorbed by the seat rail. Standard: The cab structure is tested and approved according to ROPS (ISO 3471) and FOPS (ISO 3449). The cab meets all requirements according to ISO 6055 (Operator Overhead Protection - Industrial Trucks) and SAE J386 (Operator Restraint System).

L150E

Emergency exits	1
Sound level in cab according to ISO 6396	LpA 69 dB (A)
External sound level according to ISO 6395 (Directive 2000/14/EC)	LwA 107 dB (A)
Ventilation	9 m ³ /min (318 ft ³ /min)
Heating capacity	11 kW (37,500 Btu/h)
Air-conditioning (optional)	8 kW (27,300 Btu/h)

L180E

Emergency exits	1
Sound level in cab according to ISO 6396	LpA 70 dB (A)
External sound level according to ISO 6395 (Directive 2000/14/EC)	LwA 108 dB (A)
Ventilation	9 m ³ /min (318 ft ³ /min)
Heating capacity	11 kW (37,500 Btu/h)
Air-conditioning (optional)	8 kW (27,300 Btu/h)

L220E

Emergency exits	1
Sound level in cab according to ISO 6396	LpA 75 dB (A)
External sound level according to ISO 6395 (Directive 2000/14/EC)	LwA 108 dB (A)
Ventilation	9 m ³ /min (318 ft ³ /min)
Heating capacity	11 kW (37,500 Btu/h)
Air-conditioning (optional)	8 kW (27,300 Btu/h)

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 including lift, hold, lower and float. Inductive/magnetic automatic boom kick-out 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 20 micron (absolute) filter cartridge.

L150E

Working pressure maximum, pump 1	
	24,0 MPa (3,481 psi)
Flow at and engine speed	171 l/min (45.2 US gpm) 10 MPa (1,450 psi) 32 r/s (1,900 rpm)
Working pressure, pump 2	
	26,0 MPa (3,771 psi)
Flow at and engine speed	180 l/min (47.5 US gpm) 10 MPa (1,450 psi) 32 r/s (1,900 rpm)
Pilot system	
Working pressure	3,5 MPa (508 psi)
Cycle times	
Raise*	5,9 s
Tilt*	2,0 s
Lower, empty	3,7 s
Total cycle time	11,6 s

* with load as per ISO 14397 and SAE J818

L180E

Working pressure maximum, pump 1	
	24,0 MPa (3,481 psi)
Flow at and engine speed	247 l/min (65.3 US gpm) 10 MPa (1,450 psi) 32 r/s (1,900 rpm)
Working pressure, pump 2	
	26,0 MPa (3,771 psi)
Flow at and engine speed	180 l/min (47.6 US gpm) 10 MPa (1,450 psi) 32 r/s (1,900 rpm)
Pilot system	
Working pressure	3,5 MPa (508 psi)
Cycle times	
Raise*	6,4 s
Tilt*	1,8 s
Lower, empty	3,3 s
Total cycle time	11,5 s

* with load as per ISO 14397 and SAE J818

L220E

Working pressure maximum, pump 1	
	24,0 MPa (3,481 psi)
Flow at and engine speed	199 l/min (52.6 US gpm) 10 MPa (1,450 psi) 32 r/s (1,900 rpm)
Working pressure, pump 2	
	26,0 MPa (3,771 psi)
Flow at and engine speed	234 l/min (61.8 US gpm) 10 MPa (1,450 psi) 32 r/s (1,900 rpm)
Pilot system	
Working pressure	3,5 MPa (508 psi)
Cycle times	
Raise*	5,8 s
Tilt*	1,6 s
Lower, empty	3,2 s
Total cycle time	10,6 s

* with load as per ISO 14397 and SAE J818

Lift arm system

Torque Parallel Linkage (TP Linkage) with high breakout torque and parallel action throughout the entire lifting range.

L150E

Lift cylinders	
	2
Cylinder bore	160 mm (6.3 in)
Piston rod diameter	90 mm (3.5 in)
Stroke	784 mm (30.9 in)
Tilt cylinder	
	1
Cylinder bore	230 mm (9.1 in)
Piston rod diameter	110 mm (4.3 in)
Stroke	452 mm (17.8 in)

L180E

Lift cylinders	
	2
Cylinder bore	180 mm (7.1 in)
Piston rod diameter	90 mm (3.5 in)
Stroke	788 mm (31.0 in)
Tilt cylinder	
	1
Cylinder bore	250 mm (9.8 in)
Piston rod diameter	120 mm (4.7 in)
Stroke	480 mm (18.9 in)

L220E

Lift cylinders	
	2
Cylinder bore	190 mm (7.5 in)
Piston rod diameter	90 mm (3.5 in)
Stroke	768 mm (30.2 in)
Tilt cylinder	
	1
Cylinder bore	260 mm (10.2 in)
Piston rod diameter	120 mm (4.7 in)
Stroke	455 mm (17.9 in)

Service

Service accessibility: Large, easy-to-open service doors with gas struts. Swing-out radiator grille. Possibility to log and analyze data to facilitate troubleshooting.

L150E

Refill capacities	
Fuel tank	335 l (88.4 US gal)
Engine coolant	45 l (11.9 US gal)
Hydraulic oil tank	156 l (41.2 US gal)
Transmission oil	45 l (11.9 US gal)
Engine oil	48 l (12.7 US gal)
Axles front/rear	45/55 l (11.9/14.5 US gal)

L180E

Refill capacities	
Fuel tank	335 l (88.4 US gal)
Engine coolant	45 l (11.9 US gal)
Hydraulic oil tank	156 l (41.2 US gal)
Transmission oil	45 l (11.9 US gal)
Engine oil	48 l (12.7 US gal)
Axles front/rear	45/55 l (11.9/14.5 US gal)

L220E

Refill capacities	
Fuel tank	335 l (88.4 US gal)
Engine coolant	44 l (11.6 US gal)
Hydraulic oil tank	215 l (56.8 US gal)
Transmission oil	45 l (11.9 US gal)
Engine oil	48 l (12.7 US gal)
Axles front/rear	77/71 l (20.3/18.8 US gal)

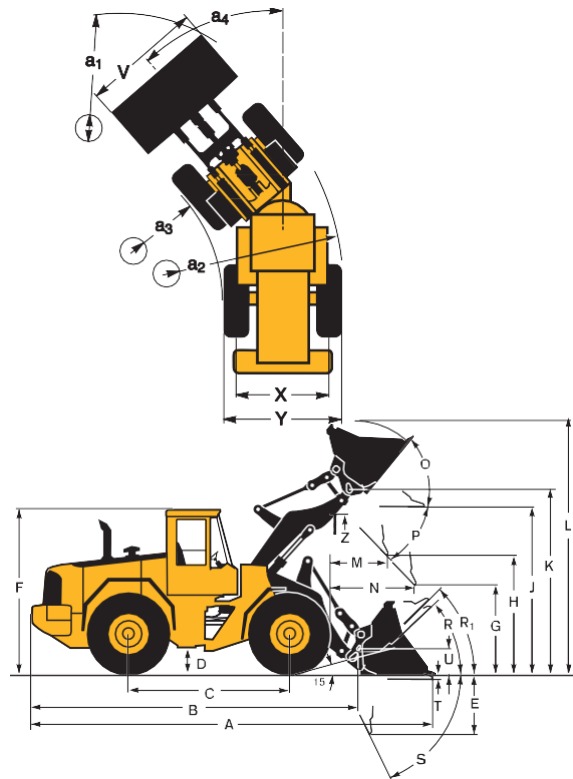
SPECIFICATIONS

Tires L150E, L180E: 26.5 R25 L3. Tires L220E: 29.5 R25 L4

	Standard boom			Long boom		
	L150E	L180E	L220E	L150E	L180E	L220E
B	7070 mm 23'2"	7170 mm 23'6"	7470 mm 24'6"	7570 mm 24'10"	7600 mm 24'11"	7790 mm 25'7"
C	3550 mm 11'8"	3550 mm 11'8"	3700 mm 12'2"	—	—	—
D	480 mm 19"	480 mm 19"	540 mm 21"	—	—	—
F	3580 mm 11'9"	3580 mm 11'9"	3730 mm 12'3"	—	—	—
G	2130 mm 7'0"	2130 mm 7'0"	2130 mm 7'0"	—	—	—
J	3930 mm 12'11"	4060 mm 13'4"	4260 mm 14'0"	4500 mm 14'9"	4550 mm 14'11"	4620 mm 15'2"
K	4340 mm 14'3"	4470 mm 14'8"	4670 mm 15'4"	4910 mm 16'1"	4970 mm 16'4"	5030 mm 16'6"
O	58 °	57 °	56 °	59 °	55 °	—
P _{max}	50 °	51 °	48 °	49 °	50 °	—
R	45 °	45 °	43 °	48 °	48 °	44 °
R ₁ [†]	48 °	48 °	47 °	53 °	53 °	49 °
S	66 °	71 °	65 °	61 °	63 °	63 °
T	85 mm 0'3.3"	130 mm 0'5.2"	90 mm 0'3.7"	140 mm 0'5.5"	210 mm 0'8.4"	100 mm 0'4"
U	520 mm 1'8"	570 mm 1'10"	590 mm 1'11"	640 mm 2'1"	—	670 mm 2'2"
X	2280 mm 7'6"	2280 mm 7'6"	2400 mm 7'10"	—	—	—
Y	2950 mm 9'8"	2950 mm 9'8"	3170 mm 10'5"	—	—	—
Z	3510 mm 11'6"	3810 mm 12'6"	4060 mm 13'4"	3960 mm 13'0"	4170 mm 13'8"	4390 mm 14'5"
a ₂	6780 mm 22'3"	6780 mm 22'3"	7110 mm 23'4"	—	—	—
a ₃	3830 mm 12'7"	3830 mm 12'7"	3940 mm 12'11"	—	—	—
a ₄	±37 °	±37 °	±37 °	—	—	—

* Carry position SAE

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



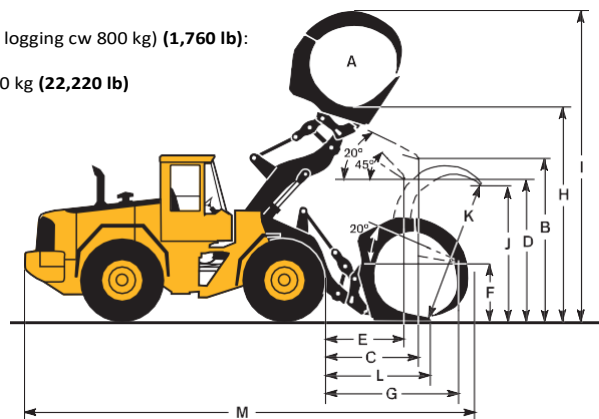
Tires L150E, L180E: 775/65 R29
Tires L220E: 875/65 R29

	L150E	L180E	L220E
A	3,1 m ² 33.4 ft ²	3,5 m ² 37.7 ft ²	4,0 m ² 43.1 ft ²
B	3660 mm 12'0"	3860 mm 12'8"	3900 mm 12'10"
C	2120 mm 6'11"	1870 mm 6'2"	2280 mm 7'6"
D	2960 mm 9'9"	3270 mm 10'9"	3140 mm 10'4"
E	1650 mm 5'5"	1460 mm 4'9"	1780 mm 5'10"
F	1630 mm 5'4"	1710 mm 5'7"	1620 mm 5'4"
G	2930 mm 9'7"	2760 mm 9'1"	3230 mm 10'7"
H	5020 mm 16'6"	5200 mm 17'1"	5360 mm 17'7"
I	7250 mm 23'9"	7650 mm 25'1"	7910 mm 25'11"
J	3080 mm 10'1"	3370 mm 11'1"	3620 mm 11'11"
K	3340 mm 10'11"	3860 mm 12'8"	3940 mm 12'11"
L	2300 mm 7'7"	2130 mm 7'0"	2650 mm 8'8"
M	9970 mm 32'9"	10 240 mm 33'7"	10 660 mm 35'10"










L150E Operating weight (incl. logging cw 1140 kg) (2,500 lb):
25 130 kg (55,400 lb)
Operating load: 7700 kg (16,980 lb)
Pin-on sorting grapple

L180E Operating weight (incl. logging cw 1140 kg) (2,500 lb):
28 510 kg (62,850 lb)
Operating load: 8710 kg (19,200 lb)
Pin-on sorting grapple

L220E Operating weight (incl. logging cw 800 kg) (1,760 lb):
32 220 kg (71,030 lb)
Operating load: 10 080 kg (22,220 lb)
Pin-on sorting grapple



L150E

Tires 26.5 R25 L3	GENERAL PURPOSE						ROCK*		LIGHT MTRL	LONG BOOM	
											
Volume, heaped ISO/SAE	m ³ yd ³	3,7 4.8	3,8 5.0	4,0 5.2	4,0 5.2	4,2 5.5	4,4 5.8	3,5 4.6	3,8 5.0	6,8 8.9	—
Volume at 110% fill factor	m ³ yd ³	4,1 5.3	4,2 5.5	4,4 5.8	4,4 5.8	4,6 6.0	4,8 6.3	—	—	7,5 7.2	—
Static tipping load, straight	kg lb	17 130 37,780	17 760 39,160	17 230 38,000	17 380 38,310	17 240 38,020	16 860 37,180	18 180 40,090	17 880 39,420	16 320 35,990	-3470 -7,650
at 35° turn	kg lb	15 340 33,820	15 870 35,000	15 360 33,870	15 500 34,180	15 370 33,900	14 990 33,040	16 210 35,730	15 940 35,140	14 480 31,930	-3190 -7,030
at full turn	kg lb	15 130 33,370	15 660 34,530	15 150 33,400	15 290 33,710	15 160 33,430	14 770 32,570	15 980 35,240	15 720 34,650	14 270 31,470	-3150 -6,940
Operating Load***	kg lb	6960 15,350	7200 15,880	6970 15,360	7030 15,500	6970 15,380	6790 14,980	7350 16,210	7230 15,940	6560 14,480	-1450 -3200
Breakout force	kN lbf	179,1 40,270	188,4 42,370	184,7 41,520	184,8 41,550	174,3 39,190	176,2 39,610	172,6 38,810	188,3 42,340	168,9 30,210	—
A	mm ft in	8620 28'4"	8800 28'10"	8590 28'2"	8790 28'10"	8880 29'2"	8670 28'5"	8870 29'1"	8750 28'9"	9140 30'0"	+520 +1'8"
E	mm ft in	1260 4'2"	1420 4'8"	1230 4'0"	1400 4'7"	1480 4'10"	1290 4'3"	1460 4'9"	1360 4'5"	1710 5'7"	+20 +0'1"
H**)	mm ft in	3010 9'11"	2900 9'6"	3030 9'11"	2900 9'6"	2830 9'4"	2970 9'9"	2860 9'5"	2930 9'7"	2620 8'7"	+570 +1'10"
L	mm ft in	5830 19'2"	5930 19'6"	5880 19'3"	5880 19'4"	5960 19'7"	5990 19'8"	5980 19'7"	5940 19'6"	6090 20'0"	+570 +1'10"
M**)	mm ft in	1250 4'1"	1400 4'7"	1210 4'0"	1360 4'5"	1420 4'8"	1260 4'2"	1410 4'7"	1300 4'3"	1560 5'1"	-20 -0'1"
N**)	mm ft in	1820 6'0"	1930 6'4"	1800 5'11"	1880 6'2"	1910 6'3"	1830 6'0"	1920 6'3"	1850 6'1"	1940 6'4"	+440 +1'5"
V	mm in	3200 125"	3000 118"	3200 125"	3230 127"	3000 118"	3200 125"	3230 127"	3230 127"	3200 125"	—
a ₁ clearance circle	mm ft in	14 650 48'1"	14 550 47'9"	14 640 48'0"	14 750 48'5"	14 580 47'10"	14 670 48'2"	14 800 48'7"	14 740 48'4"	14 890 48'10"	—
Operating weight	kg lb	23 430 51,670	22 900 50,500	23 190 51,140	23 100 50,930	23 140 51,030	23 530 51,880	24 510 54,050	24 470 53,960	23 690 52,240	+300 +660

*) With L5 tires

**) Measured to the tip of the bucket teeth or bolt-on edge. Dump height to bucket edge. Measured at 45° dump angle. (Spade nose buckets at 42°.)

***) Rated at Volvo's recommended maximum utilization for L150E.

Note: This only applies to genuine Volvo attachments.

Bucket Selection Chart

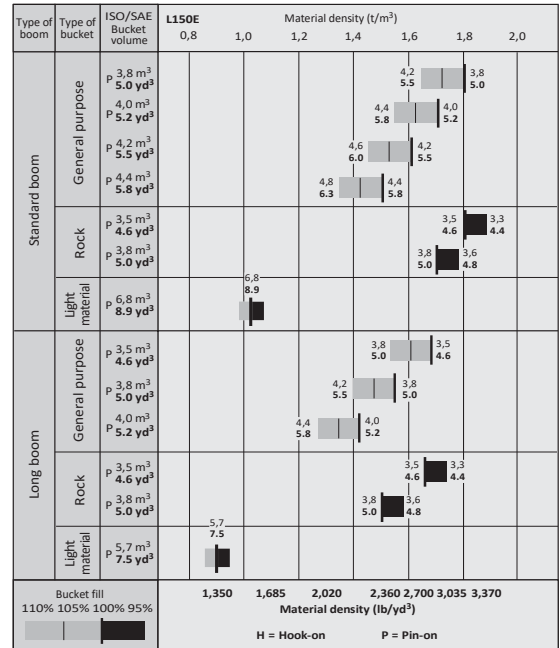
The chosen bucket is determined by the density of the material and the expected bucket fill factor. The actual bucket volume is often larger than the rated capacity, due to the features of the TP Linkage, including an open bucket design, good rollback angles in all positions and good bucket filling performance. The example represents a standard boom configuration. **Example: Sand and gravel. Fill factor ~ 105%. Density 2,700 lb/yd³. Result: The 5.2 yd³ bucket carries 5.5 yd³. For optimal stability always consult the bucket selection chart.**

Material	Bucket fill, %	Material density, t/m ³ / lb/yd ³	ISO/SAE bucket volume, m ³ / yd ³	Actual volume, m ³ / yd ³
Earth/Clay	~ 110	~ 1,6	~ 2,700	3,8 5.0 ~ 4,2 ~ 5.8
		~ 1,6	~ 2,700	4,0 5.2 ~ 4,4 ~ 5.8
Sand/Gravel	~ 105	~ 1,5	~ 2,530	4,2 5.5 ~ 4,6 ~ 6.0
		~ 1,6	~ 2,870	3,8 5.0 ~ 4,0 ~ 5.2
Aggregate	~ 100	~ 1,6	~ 2,700	4,0 5.2 ~ 4,2 ~ 5.5
		~ 1,6	~ 2,700	4,2 5.5 ~ 4,4 ~ 5.8
Rock	" 100	~ 1,8	~ 3,040	3,8 5.0 ~ 3,8 ~ 5.0
		~ 1,7	~ 2,870	4,0 5.2 ~ 4,0 ~ 5.2
		~ 1,6	~ 2,700	4,2 5.5 ~ 4,2 ~ 5.5
		~ 1,7	~ 2,870	3,5 4.6 ~ 3,5 ~ 4.6










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

Supplemental Operating Data

Tires 26.5 R25 L3	Standard boom				Long boom					
	26.5 R25 L5		775/65 R29		26.5 R25 L5		775/65 R29			
Width over tires	mm	in	+30	+1.2	+170	+6.7	+30	+1.2	+170	+6.7
Ground clearance	mm	in	+30	+1.2	+25	+1.0	+30	+1.2	+25	+1.0
Tipping load, full turn	kg	lb	+770	+1,700	+630	+1,390	+650	+1,430	+550	+1,210
Operating weight	kg	lb	+1050	+2,310	+920	+2,030	+1050	+2,310	+920	+2,030



L180E

Tires 26.5 R25 L3	GENERAL PURPOSE						ROCK*		LIGHT MTRL	LONG BOOM	
	 Bolt-on edges	 Bolt-on edges	 Teeth & Segments	 Bolt-on edges	 Teeth & Segments	 Bolt-on edges	 Teeth & Segments	 Teeth & Segments	 Bolt-on edges		
Volume, heaped ISO/SAE	m ³ yd ³	4,0 5.2	4,4 5.8	4,4 5.8	4,6 6.0	4,6 6.0	4,8 6.3	4,2 5.5	4,4 5.8	7,8 10.2	—
Volume at 110% fill factor	m ³ yd ³	4,4 5.8	4,8 6.3	4,8 6.3	5,1 6.6	5,1 6.6	5,3 6.9	—	—	8,6 11.2	—
Static tipping load, straight	kg lb	21 120 46,570	20 000 44,090	20 880 46,050	20 760 45,770	20 900 46,090	20 560 45,330	21 160 47,640	21 410 47,250	19 610 43,230	-3690 -8,140
at 35° turn	kg lb	18 770 41,380	17 690 39,000	18 530 40,860	18 400 40,570	18 540 40,890	18 210 40,160	19 170 42,260	19 000 41,890	17 310 38,160	-3360 -7,410
at full turn	kg lb	18 500 40,790	17 430 38,420	18 260 40,270	18 130 39,980	18 280 40,300	17 950 39,570	18 890 41,650	18 730 41,290	17 050 37,590	-3320 -7,320
Operating Load***	kg lb	8330 18,360	7850 17,300	8220 18,120	8160 18,000	8230 18,140	8080 17,810	8500 18,750	8430 18,580	7670 16,920	-1500 -3300
Breakout force	kN lbf	225,1 50,600	202,5 45,530	214,9 48,320	214,7 48,280	214,9 48,320	206,0 46,320	193,7 43,550	215,4 48,420	157,9 35,500	—
A	mm ft in	8710 28'7"	8800 29'1"	8990 29'6"	8790 28'10"	8990 29'6"	8860 29'1"	9130 29'11"	8980 29'6"	9340 30'8"	+470 +1'7"
E	mm ft in	1260 4'3"	1420 4'9"	1540 5'1"	1360 4'6"	1540 5'1"	1420 4'8"	1660 5'5"	1510 4'11"	1860 6'1"	+40 +0'2"
H**)	mm ft in	3160 10'4"	3060 10'0"	2980 9'9"	3110 10'2"	2980 9'9"	3060 10'1"	2900 9'6"	3000 9'10"	2690 8'10"	+490 +1'7"
L	mm ft in	6010 19'9"	6170 20'3"	6130 20'1"	6170 20'3"	6170 20'3"	6170 20'3"	6310 20'8"	6210 20'5"	6300 20'8"	+490 +1'7"
M**)	mm ft in	1230 4'0"	1360 4'5"	1420 4'8"	1280 4'2"	1420 4'8"	1330 4'4"	1520 5'0"	1390 4'7"	1620 5'4"	+20 -0'0.8"
N**)	mm ft in	1900 6'3"	1970 6'6"	2010 6'7"	1930 6'4"	2010 6'7"	1960 6'5"	2070 6'10"	1990 6'6"	2050 6'9"	+400 -1'4"
V	mm in	3200 125"	3200 125"	3230 127"	3200 125"	3230 127"	3200 125"	3230 127"	3230 127"	3400 133"	—
a ₁ clearance circle	mm ft in	14 650 48'4"	14 550 48'7"	14 640 48'10"	14 750 48'5"	14 580 48'10"	14 670 48'6"	14 960 49'1"	14 880 48'10"	15 220 49'11"	—
Operating weight	kg lb	26 030 57,400	26 680 58,830	26 270 57,930	26 410 58,230	26 310 58,010	26 470 58,360	27 700 61,070	27 590 60,830	26 830 59,150	+270 +620

*) With L5 tires





**) Measured to the tip of the bucket teeth or bolt-on edge. Dump height to bucket edge. Measured at 45° dump angle. (Spade nose buckets at 42°.)

***) Rated at Volvo's recommended maximum utilization for L180E.

Note: This only applies to genuine Volvo attachments.

Bucket Selection Chart

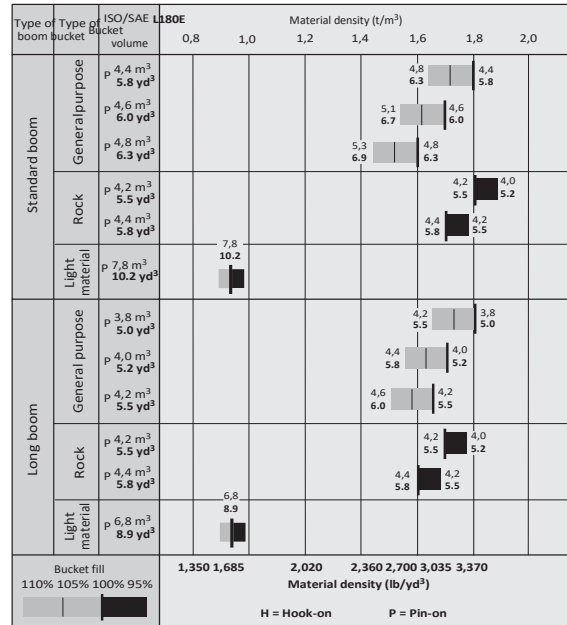
The chosen bucket is determined by the density of the material and the expected bucket fill factor. The actual bucket volume is often larger than the rated capacity, due to the features of the TP Linkage, including an open bucket design, good rollback angles in all positions and good bucket filling performance. The example represents a standard boom configuration. **Example: Sand and gravel. Fill factor ~ 105%. Density 1,6 t/m³. Result: The 4,6 m³ bucket carries 4,8 m³. For optimal stability always consult the bucket selection chart.**

Material Bucket fill, %		Material density, t/m ³ / lb/yd ³	ISO/SAE bucket volume, m ³ / yd ³	Actual volume, m ³ / yd ³
Earth/Clay ~ 110 	~ 1,6 ~ 2,700	4,4	5,8	~ 4,8 ~ 6,3
	~ 1,5 ~ 2,530	4,6	6,0	~ 5,1 ~ 6,7
	~ 1,4 ~ 2,360	4,8	6,3	~ 5,3 ~ 6,9
Sand/Gravel ~ 105 	~ 1,7 ~ 2,870	4,4	5,8	~ 4,6 ~ 6,0
	~ 1,6 ~ 2,700	4,6	6,0	~ 4,8 ~ 6,3
	~ 1,5 ~ 2,530	4,8	6,3	~ 5,1 ~ 6,7
Aggregate ~ 100 	~ 1,8 ~ 3,040	4,4	5,8	~ 4,4 ~ 5,8
	~ 1,7 ~ 2,870	4,6	6,0	~ 4,6 ~ 6,0
	~ 1,6 ~ 2,700	4,8	6,3	~ 4,8 ~ 6,3
Rock " 100 	~ 1,7 ~ 2,870	4,3	5,6	~ 4,3 ~ 5,6

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

Supplemental Operating Data

Tires 26.5 R25 L3	Standard Boom				Long Boom				
	26.5 R25 L5		775/65 R29		26.5 R25 L5		775/65 R29		
Width over tires	mm	+30	+1.2	+130	+5.1	+30	+1.2	+130	+5.1
Ground clearance	mm	+30	+1.2	+20	+0.8	+30	+1.2	+20	+0.8
Tipping load, full turn	kg lb	+700	+1,540	+620	+1,370	+680	+1,500	+540	+1,190
Operating weight	kg lb	+970	+2,140	+920	+2,030	+970	+2,140	+920	+2,030



L220E

Tires 29.5 R25 L4	GENERAL PURPOSE					ROCK*			LIGHT MATERIAL	LONG BOOM	
	Bolt-on edges	Teeth & Segments	Bolt-on edges	Teeth & Segments	Bolt-on edges	Teeth & Segments	Teeth & Segments	Teeth & Segments	Bolt-on edges		
Volume, heaped ISO/SAE	m ³ yd ³	4,9 6,4	5,2 6,8	5,4 7,1	5,6 7,3	6,0 7,8	4,5 5,9	4,5 5,9	5,0 6,5	8,2 10,7	—
Volume at 110% fill factor	m ³ yd ³	5,4 7,0	5,7 7,5	5,9 7,8	6,2 8,1	6,6 8,6	—	—	—	9,0 11,8	—
Static tipping load, straight	kg lb	23 680 52,210	23 640 52,120	23 590 52,010	23 540 51,900	23 450 51,700	24 560 54,150	24 070 53,070	23 240 51,240	22 440 49,470	-2820 -6,220
at 35° turn	kg lb	21 060 46,430	21 020 46,350	20 960 46,210	20 910 46,100	20 830 45,920	21 880 48,240	21 400 47,180	20 640 45,500	19 870 43,800	-2580 -5,690
at full turn	kg lb	20 760 45,780	20 720 45,690	20 660 45,550	20 610 45,440	20 530 45,260	21 570 47,550	21 100 46,520	20 350 44,860	19 580 43,170	-2550 -5,620
Operating Load***	kg lb	9030 19,920	9010 19,880	8990 19,820	8970 19,770	8930 19,690	9380 20,690	9180 20,240	8850 19,520	8520 18,780	-1110 -2440
Breakout force	kN lbf	231,0 51,930	225,3 50,650	224,5 50,470	220,7 49,620	212,9 47,860	240,7 54,110	192,6 43,300	178,6 40,150	172,6 38,800	—
A	mm ft in	9050 29'8"	9340 30'8"	9090 29'10"	9380 30'9"	9190 30'2"	9210 30'3"	9580 31'5"	9730 31'11"	9550 31'4"	+320 +1'1"
E	mm ft in	1280 4'3"	1530 5'0"	1320 4'4"	1570 5'2"	1400 4'7"	1410 4'8"	1730 5'8"	1870 6'1"	1730 5'8"	-20 -0'1"
H**)	mm ft in	3310 10'10"	3110 10'2"	3280 10'9"	3090 10'2"	2220 10'7"	3210 10'6"	2980 9'9"	2920 9'7"	2940 9'8"	+360 +1'2"
L	mm ft in	6390 21'0"	6450 21'2"	6500 21'4"	6540 21'6"	6620 21'8"	6480 21'3"	6420 21'1"	6500 21'4"	6480 21'3"	+360 +1'2"
M**)	mm ft in	1260 4'2"	1430 4'8"	1290 4'3"	1460 4'9"	1350 4'5"	1340 4'5"	1640 5'4"	1790 5'10"	1580 5'2"	-30 -0'1.2"
N**)	mm ft in	2020 6'7"	2120 6'11"	2040 6'8"	2130 7'0"	2070 6'10"	2060 6'9"	1230 7'4"	2280 7'6"	2170 7'1"	+270 +0'11"
V	mm in	3400 133"	3430 135"	3400 133"	3430 135"	3400 133"	3430 135"	3430 135"	3430 135"	3700 145"	—
a ₁ clearance circle	mm ft in	15 470 50'9"	15 640 51'4"	15 500 50'10"	15 650 51'4"	15 540 51'0"	15 580 51'1"	15 770 51'9"	15 850 52'0"	16 010 52'6"	—
Operating weight	kg lb	31 110 68,600	31 130 68,650	31 250 68,910	31 320 69,050	31 160 69,140	32 320 71,260	32 520 71,710	32 690 72,080	31 680 69,840	+380 +840

*) With L5 tires

**) Measured to the tip of the bucket teeth or bolt-on edge. Dump height to bucket edge. Measured at 45° dump angle. (Spade nose buckets at 42°.)

***) Rated at Volvo's recommended maximum utilization for L220E.

Note: This only applies to genuine Volvo attachments.

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.

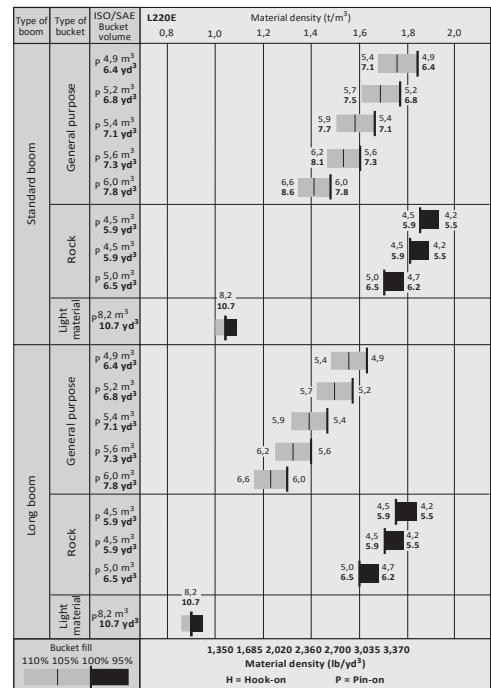
Result: The 5,2 m³ bucket carries 5,5 m³. For optimal stability always consult the bucket selection chart.

Material	Bucket fill, %		Material density,		ISO/SAE bucket volume,		Actual volume,	
			t/m ³	lb/yd ³	m ³	yd ³	m ³	yd ³
Earth/Clay	~ 110		~ 1,6	~ 2,700	4,9	6,4	~ 5,4	~ 7,1
			~ 1,5	~ 2,530	5,2	6,8	~ 5,7	~ 7,5
Sand/Gravel	~ 105		~ 1,4	~ 2,360	5,4	7,1	~ 5,9	~ 7,0
			~ 1,6	~ 2,700	5,2	6,8	~ 5,5	~ 7,2
Aggregate	~ 100		~ 1,5	~ 2,530	5,4	7,1	~ 5,7	~ 7,5
			~ 1,8	~ 3,040	4,9	6,4	~ 4,9	~ 6,4
Rock	~ 100		~ 1,7	~ 2,870	5,2	6,8	~ 5,2	~ 6,8
			~ 1,6	~ 2,700	5,4	7,1	~ 5,4	~ 7,1

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

Supplemental Operating Data

Tires 29.5 R25 L4	Standard boom						Long boom							
	29.5 R25 L3		29.5 R25 L5		875/65 R29		29.5 R25 L3		29.5 R25 L5		875/65 R29			
Width over tires	mm	in	-20	-0.8	+35	+1.4	+95	+3.7	-20	-0.8	+35	+1.4	+95	+3.7
Ground clearance	mm	in	-20	-0.8	+35	+1.4	-25	-1.0	-230	-0.8	+35	+1.4	-25	-1.0
Tipping load, full turn	kg	lb	-240	-530	+855	+1,880	+65	+140	-20	-510	+780	+1,720	+70	+150
Operating weight	kg	lb	-445	-980	+1130	+2,490	+290	+640	-445	-980	+1130	+2,490	+290	+640



STANDARD EQUIPMENT

Engine

Three stage air cleaner with ejector and inner filter
Indicator glass for coolant level
Preheating of induction air
Fuel filter, extra large with water trap
Coolant filter
Oil trap
Fan air intake protection
Fuel fill strainer
Reversible cooling fan

Electrical system

24 V, pre-wired for optional accessories
Alternator, 24 V/55 A
Battery disconnect switch
Fuel gauge
Hour meter
Electric horn
Instrument panel with symbols
Lighting:
• Twin halogen front headlights with high and low beams
• Parking lights
• Double brake and tail lights
• Turn signals with flashing hazard light function
• Halogen work lights (2 front and 2 rear)
• Instrument lighting
Air filter for alternator
Reverse alarm, self adjusting

Contronic monitoring system

ECU with log and analysis system
Contronic display
Fuel consumption
Ambient temperature
Engine torque reduction in case of malfunction indication:
• High engine coolant temperature
• High engine oil temperature
• Low engine oil pressure
• High crankcase pressure
• High charge air temperature
Engine shutdown to idle in case of malfunction indication:
• High transmission oil temperature
• Slip in transmission clutches
Start interlock when gear is engaged
Brake test
Test function for warning and indicator lights
Warning and indicator lights:
• Battery charging
• Oil pressure engine
• Oil pressure, transmission
• Brake pressure
• Parking brake
• Hydraulic oil level
• Axle oil temperature
• Primary steering
• Secondary steering
• High beams
• Turn signals
• Rotating beacon
• Preheating coil
• Differential lock
• Coolant temperature
• Transmission oil temperature
• Brake charging
Level warnings:
• Engine oil level
• Coolant level
• Transmission oil level
• Hydraulic oil level
• Washer fluid level

Drivetrain

Automatic Power Shift with operator-controlled disengagement function for transmission cut-out when braking and mode selector with AUTO function
Fully Automatic Powershift 1-4
PWM-control between different gear positions
Forward and reverse switch by lever console
Differentials:
front: 100% hydraulic diff lock
rear: conventional

Tires

26.5 R25 for L150E & L180E
29.5 R25 for L220E

Brake system

Wet oil circulation-cooled disc brakes on all four wheels
Dual brake circuits
Dual service brake pedals
Secondary brake system
Parking brake, el-hydraulic
Brake wear indicator

Cab

ROPS (ISO 3471), FOPS (ISO 3449)
Lock kit, one combination
Acoustic inner lining
Ashtray
Cigarette lighter
Lockable door
Cab heating with filter, fresh air inlet and defroster
Floor mat
Interior light
Interior rearview mirror
2 exterior rearview mirrors
Openable window, right side
Tinted safety glass
Lap-type retractable seatbelt (SAE J386)
Adjustable lever console
Ergonomically designed operator's seat with adjustable suspension
Storage compartment
Sun visor
Beverage holder
Windshield washers front and rear
Windshield wipers front and rear
Interval function for front and rear windshield wipers
Service platforms with anti-slip surfaces on front and rear fenders
Speedometer
Sliding window, right
Sliding window, door
Operator's seat air suspended with electrical heating

Hydraulic system

Main valve, 2-spool
Pilot valve, 2-spool
Variable displacement axial piston pumps (3) for:
• working hydraulics
• steering system, pilot hydraulics and brakes
• fan motor
Boom lowering system
Boom kick-out, automatic, adjustable
Bucket positioner, automatic with position indicator, adjustable
Hydraulic oil cooler

External equipment

Noise and vibration dampening suspension of cab, engine and transmission
Lifting eyes
Easy-to-open side panels
Frame steering, joint lock
Vandalism lock prepared for batteries and engine compartment
Tow hitch

Other equipment

Decals, USA

OPTIONAL EQUIPMENT

Service and maintenance	L150E	L180E	L220E
Toolbox, lockable	•	•	•
Tool kit	•	•	•
Automatic lubrication system	•	•	•
Automatic lubrication system, stainless steel	•	•	•
Automatic lubrication system inclusive long boom	•	•	•
Automatic lubrication system, stainless steel, for long boom	•	•	•
Automatic lubrication system for attachment bracket, welded	•	•	•
Automatic lubrication system, stainless steel, for attachment bracket, welded	•	•	•
Refill pump for automatic lubrication system	•	•	•
Wheel nut wrench kit	•	•	•
Oil sampling valve	•	•	•
Engine equipment			
Engine block heater, 120 V	•	•	•
Engine auto shutdown	•	•	•
Increased engine protection	•	•	•
Disabled engine protection	•	•	•
Air pre-cleaner, oil-bath type	•	•	•
Air pre-cleaner, turbo type one stage	•	•	•
Air pre-cleaner, Sy-Klone type one stage	•	•	•
Air pre-cleaner, Sy-Klone type, two stage	•	•	•
Hand throttle control	•	•	•
Fuel filter, with water trap and heating	•	•	•
Exhaust heat insulation	•	•	•
Radiator, corrosion-protected	•	•	•
Reversible cooling fan and axle oil cooler	•	•	•
Electrical system			
Language kit 1	•	•	•
Alternator, 80 A	•	•	•
Work light, attachments	•	•	•
Work lights front, extra	•	•	•
Work lights rear, extra	•	•	•
Work lights front, on cab, dual	•	•	•
Work lights front, high intensity	•	•	•
Reverse lights, automatic	•	•	•
Shortened headlight support brackets	•	•	•
Rotating beacon, collapsible	•	•	•
Warning beacon, flashing strobe light	•	•	•
Battery disconnect switch, additional in cab	•	•	•
Anti-theft device	•	•	•
License plate holder, lighting	•	•	•
Cab			
Installation kit for radio, 11 A, 12 V left/right in cab	•	•	•
Installation kit for radio, 20 A, 12 V	•	•	•
Radio with cassette player	•	•	•
Radio with CD-player	•	•	•
Sun blinds, front and rear windows	•	•	•
Sun blinds, side windows	•	•	•
Retractable lap-type belt, longer and wider than standard	•	•	•
Air-conditioning with corrosion-prot. condenser	•	•	•
Air-conditioning with corrosion-prot. condenser and auto-matic temp. control (ATC)	•	•	•
Ventilation air filter for work in asbestos environment	•	•	•
Cab air pre-cleaner, Sy-Klone type	•	•	•
Operator's seat with low backrest	•	•	•
Operator's seat with electrical heating	•	•	•
Operator's seat with low backrest and electrical heating	•	•	•
Operator's seat with high backrest and electrical heating	•	•	•
Operator's seat air suspended, heavy-duty	•	•	•
Operator's seat air suspended with high backrest and electrical heating	•	•	•
Armrest (left) for operator seat	•	•	•
Adjustable steering wheel	•	•	•
Steering wheel knob	•	•	•
Noise reduction kit	•	•	•
Rear-view camera including monitor, black & white	•	•	•
Rear-view camera including monitor, colour	•	•	•
Rear-view mirrors, electrically heated	•	•	•
Cab ladder, rubber suspended	•	•	•
Drivetrain			
Limited slip rear	•	•	•
Diff lock, limited slip front and rear in comb. with axle oil cooler	•	•	•
Speed limiter 20 km/h (12.5 mph)	•	•	•
Speed limiter 30 km/h (18.6 mph)	•	•	•

Brake system	L150E	L180E	L220E
Oil cooler and filter for front and rear axle	•	•	•
Stainless steel brake lines	•	•	•
Hydraulic system			
Single lever control	•	•	•
Single lever control for 3rd hydraulic function	•	•	•
3rd hydraulic function	•	•	•
3rd hydraulic function for long boom	•	•	•
3rd-4th hydraulic function	•	•	•
Boom Suspension System	•	•	•
Biodegradable hydraulic fluid	•	•	•
Fire resistant hydraulic fluid	•	•	•
Hydraulic fluid for hot climate	•	•	•
Attachment bracket, welded	•	•	•
Arctic kit, attachment locking hoses and 3rd hydraulic function	•	•	•
Arctic kit, pilot hoses and brake accum. incl. hydraulic oil	•	•	•
Separate attachment locking, standard boom	•	•	•
Separate attachment locking, long boom	•	•	•
Return-to-dig	•	•	•
Hydraulic oil cooler, extra	•	•	•
External equipment			
Long boom	•	•	•
Wideners for front & rear fenders	•	•	•
Rear swing-out and front fenders with wideners	•	•	•
Delete front fenders	•	•	•
Logging counterweight	•	•	•
Block handling counterweight	•	•	•
Chevrons, signal painted counterweight	•	•	•
Protective equipment			
Guards for front headlights	•	•	•
Guards for tail lights	•	•	•
Guards for tail lights, heavy-duty	•	•	•
Guards for side and rear windows	•	•	•
Guards for radiator grill	•	•	•
Guard for front windshield	•	•	•
Fire suppression system	•	•	•
Bellyguard front	•	•	•
Bellyguard rear	•	•	•
Bellyguard, oil pan	•	•	•
Cover plate front frame, heavy-duty	•	•	•
Cover plate, under cab	•	•	•
Guards for grease nipples	•	•	•
Guards for steer cylinder	•	•	•
Guards for boom cylinder hose and tube	•	•	•
Corrosion-protection, painting of attachment bracket	•	•	•
Corrosion-protection, painting of machine	•	•	•
Bucket teeth protection	•	•	•
Guards for wheel/axle seals	•	•	•
Other equipment			
Comfort Drive Control, CDC	•	•	•
Secondary steering	•	•	•
Decals, English/Spanish	•	•	•
Sound decal, EU	•	•	•
Sign, slow moving vehicle	•	•	•
Tires			
775/65 R29	•	•	•
875/65 R29	•	•	•
Attachments			
Buckets:	•	•	•
• Straight with/without teeth	•	•	•
• Spade nose with/without teeth	•	•	•
• Refuse tamping bucket	•	•	•
• High tipping	•	•	•
• Light materials	•	•	•
Bolt-on and weld-on bucket teeth	•	•	•
Cutting edge in three sections, bolt-on	•	•	•
Fork equipment	•	•	•
Material handling arm	•	•	•
Log grapples	•	•	•



Volvo Construction Equipment is different. The company's products are designed, built and supported in a different way. That difference comes from our 170-year engineering heritage. A heritage of thinking first about the people who actually use the machines. About how to make them safer, more comfortable, more productive. About the environment we all share. The result of that thinking is a growing range of machines and a global support network dedicated to helping you do more. People around the world are proud to use Volvo. And we're proud of what makes Volvo different – **More care. Built in.**



All products are not available in all markets. Under our policy of continuous improvement, we reserve the right to change specifications and design without prior notice. The illustrations do not necessarily show the standard version of the machine.

VOLVO

Construction Equipment

Volvo Construction Equipment North America, Inc.
One Volvo Drive, Asheville, NC 28803-3447
www.volvoce.com

Ref. No. 22 A 100 2391
Printed in USA 05/06 – 5,0
Volvo, Asheville

English
USA