

VOLVO WHEEL LOADER

L350F

PRELIMINARY 2006-10-18



MORE CARE. BUILT IN.



VOLVO - A PARTNER TO TRUST

L350F is a wheel loader that never compromises. It's a complete whole where the machine, the lift arm system, and the attachment together make up a dynamic unit, a solid combination of power and intelligence. It's fast, smooth, and stable, and lifts both high and heavy. A durable loader that handles the toughest jobs, around the clock, day or night.

Increase your profitability

The bigger the machine, the tougher the demands on reliability. In fact, a big loader like the L350F is like a factory on wheels and requires a businesslike approach where revenues far outweigh costs. In light of this, you'll be glad to know that in most applications, the L350F is more fuelefficient than other machines in its class. Throw in reliability and you're looking at outstanding economy and productivity. All together a significant increase in profitability.

A global company with local presence

When you buy a Volvo L350F, you not only get one of the most reliable wheel loaders on the market. With our global dealer and service network you also get Volvo Construction Equipment as your reliable and committed partner. Wherever you are, you get fast access to well-trained service personnel and the right parts. In short, all the products, services, and knowledge you need to optimize your machine's profitability and productivity.

Specifications

Engine:	Volvo D16E LA E3
Max power at	28,3-30,0 r/s (1700-1800 rpm)
SAE J1995 gross:	397 kW (540 metric hp)
ISO 9249, SAE J1349 net:	394 kW (535 metric hp)
Breakout force:	472,8 kN*
Static tipping load at full turn:	34 780 kg*
Buckets:	6,2-12,7 m ³
Log grapples:	5,5-6,3 m ²
Operating weight:	50,0-54,0 t
Tires:	35/65 R33 875/65 R33

* Rock bucket: 6,9 m³ straight edge with teeth and segments,
Tires: 875/65 R33, Standard boom





STRENGTH THAT MAXIMIZES YOUR INCOME

The Volvo L350F gives you a way to move more tons per hour. The powerful engine combined with the fully automatic transmission gives instant response at even the lowest engine speed, and Volvo's drivetrain always promotes maximum power when and where it's needed most. The result is maximal productivity and lowest possible cost per ton.

Full power even at idle speed

With Volvo's new generation of engines, Volvo wheel loaders have become both more powerful and easier to operate. The L350F responds immediately with its 540 hp, electronically controlled low-emission engine, which delivers full power even at low rpm.

Always the right gear

Volvo's planetary transmission features smooth shifting with automatic lock-up in third and fourth gears. All the operator has to do is to select forward or reverse, and then Automatic Power Shift (APS) automatically selects the right gear to suit current engine revs and ground speed.

Volvo's drivetrain provide top reliability

Volvo's drivetrain components are tailored to match each other and dimensioned to provide top reliability. On the L350F, the rear axle is mounted in a maintenance-free axle cradle, which means that the operator doesn't have to carry out lubrication and there is no downtime.

Gentle and powerful brakes

The Volvo L350F is equipped with Volvo's hydraulically operated, axle oilcooled wet disc brakes. This system is both powerful and gentle in operation, while ensuring long service life.



Volvo Engine D16E V-ACT

Volvo's engine feature Volvo Advanced Combustion Technology, V-ACT, an emissions regulation solution based on simple yet proven technology

The turbocharged D16E with air-to-air intercooling features both electronically-controlled fuel injection and hydrostatic variable-speed cooling fan an overhead camshaft and four valves per cylinder

Volvo HTE 400 Heavy-Duty Transmission

Volvo's planetary transmission features smooth shifting with automatic lock-up in third and fourth gears, saving fuel to reduce costs

The 4th generation APS featuring automatic mode selector allows the operator to choose between four different gear shifting programs – these features save fuel and promote higher productivity

Fully Automatic Power Shift downshifts to first gear automatically

Volvo AHW 90 Heavy-Duty Axles

Outboard mounted wet disc brakes and planetary hub reductions increases lateral stability, optimizes oil cooling and simplifies serviceability

Permanently lubricated rear axle trunnion mount bearings never required greasing

Volvo Brakes

To increase site safety, the fully hydraulic dual circuit service brakes automatically apply the parking brake when the engine is shutdown or if brake pressure is too low

Hydraulic dual-circuit system for enhanced safety

Oil circulation cooled axles with filters ensure effective braking and a long service life



POWER WITH PRECISION

With its lift arm system, load-sensing hydraulics, easily operated steering and high stability, the L350F allows the operator equal measures of power and precision. The load-sensing hydraulic system ensures that hydraulic oil is pumped around the system only when and where it's needed, providing greater efficiency and lower fuel consumption.

No power loss through the loading cycle

The lift arm system delivers high breakout torque at ground level, allowing the operator to handle heavy material without any power loss at any point in the loading cycle. This is one of the reasons why the L350F is an exceptionally efficient production machine.

Powerful and intelligent

The L350F features 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 where it's needed, when it's needed. When no flow is required in the hydraulic system, all engine power is diverted to the drivetrain. This provides smoother operation, lower fuel consumption, and more precise control of machine and load. You always get full power, regardless of revs.



Stay on course at all speeds

The electro-hydraulic steering is easily operated and precise, and stays on course at all speeds, both with the steering wheel and the Comfort Drive Control (CDC)*. The load-sensing hydrostatic steering system is activated only when the steering is used, resulting in a highly efficient system where there is no waste of fuel or power.

Volvo Lift Arm System

Volvo's proven lift arm system provides excellent breakout force

Improved lift arm geometry allows for excellent attachment visibility

Dual pin seals reduce wear for higher durability and long service life

Volvo Load-Sensing Hydraulics

Electro-hydraulic load-sensing systems include variable displacement piston pumps to provide flow and pressure delivering power where and when it's needed increasing fuel efficiency

Volvo's Boom Suspension System (BSS)* features two operating modes and is designed with heavy-duty shock accumulators that promote faster, more comfortable work cycles helping productivity by up to 20 percent

Volvo Steering

Load-sensing steering system features end stroke dampening that provides smooth, full range steering and eliminates frame shocks that may occur during quick turns

Comfort Drive Control (CDC)* significantly reduces repetitive steering wheel movements by integrating fingertip controls into the left arm rest, helping lower operator fatigue while increasing productivity and operator comfort

Volvo Frames

Volvo's world-class frame resists high stresses and provides excellent operational stability, lower vibration and promotes low sound levels

Highly-organized articulation joint provides not only visual appeal but component and frame reliability – by designing the upper and lower joints distant from one another the frame resists larger forces preventing expensive line boring and increasing bearing service life

*Optional equipment



SUSTAINED ENDURANCE – YEAR AFTER YEAR

With big loaders, availability is everything. If the machine stops, work stops. That's why the L350F is designed, down to the smallest detail, to work without downtime, no matter how hard you push it. For example, there are very few wheel loaders on the market with as many filters as Volvo. For us it's only natural and obvious to protect all expensive and vital components to prevent costly downtime and repairs. It's built to run.

Four levels of support, one level of care

Your machine should be profitable, not only today but tomorrow as well. At Volvo we have an extensive range of different tools, programs, and service agreements ensuring that your Volvo will give you optimal usage and profitability for a long time ahead. The best way to get the most out of your Volvo is to invest in a Volvo Customer Support Agreement. Since different businesses have different needs, we've made it easy for you to select the Customer Support Agreement that's right for your business by creating four Customer Support Agreement packages – from a program of regular machine inspections to a comprehensive repair and maintenance program that removes the need for an on-site workshop.

High resale value and long service life

The Volvo L350F is not just one of the most productive loaders on the market; it's also one of the most cost-effective. There are several reasons for this – Volvo's renowned reliability, our excellent financing packages, the low fuel consumption, the high resale value, and the minimal service requirement. All this makes it the most productive and reliable machine in the business. Shift after shift, year after year.



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

Volvo's oil-bath pre-cleaner* in combination with the standard air filter is far more effective in dusty and dirty operating conditions

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 designed and engineered rear axle trunnion is maintenance-free and lubed for life

A brake with two-level warning for high axle oil temperature provides effective component protection and longer service life.

*Optional equipment



PROTECTION TO STAY FOCUSED IN OPERATION

Volvo has designed wheel loaders since 1954. Right from the beginning we put safety first, and we have used all the experience and knowledge we have amassed throughout these years to make the L350F as safe as possible. But not at the expense of comfort, operating joy, and power. Quite the opposite. We know that safety and productivity partly is the result of a satisfied operator – man and machine in perfect harmony.

Generous space

You really feel welcome in Volvo's latest cab. It's both wider and deeper than its predecessor. There is lots of space to stretch out your legs, and ample space for storage boxes, boots, and cups. The comfortable seat suits operators of all sizes. The large, swept windshield gives optimized visibility in every direction, up high as well, making it easy to load even with Long Boom*. To facilitate communication with others on the site, there are sliding windows on both sides. All instruments are easy to read, and on the right side all buttons are very easily accessible on a sturdy aluminum pillar.

Always a comfortable climate

Volvo's unique and patented two-stage air cleaning re-circulates up to 90 percent of the air, and only 10 percent comes from the outside. The air in the cab is cleaned to 98 percent. Automatic Climate Control (ACC) is standard and ensures an always comfortable climate in the cab, regardless of weather and temperature. And if the operator needs a break, the heat can be left on even with the engine off, which both saves fuel and protects the environment.



Volvo Care Cab

Volvo's world class operator's environment features a larger, more spacious interior, large storage compartments, front pillar-mounted switches and in-cab adjustable return-to-dig, boom kick-out and bucket position detents

From the fully-adjustable operator's seat, armrest and steering column to the floor-to-ceiling front windshield, long shifts have never been so comfortable and with the new viscous cab mounts unwanted noise and vibration are further dampened

The Volvo Care Cab pressurizes and twice-filters all incoming air promoting a clean interior and a healthy, happy operator – Automatic Climate Control promises consistent cab temperatures throughout the entire shift

Contronic Monitoring System, available in 24 languages, alerts the operator of machine status and maintenance needs providing maximum availability and protection during the shift

Unobstructed 360 degree visibility defines the Volvo Care Cab; a wide laminated windshield, large windows, narrow ROPS pillars with a low reinforcement frame and optimized visibility to all attachments help increase productivity – night work is simplified with the powerful front and rear halogen lights which provide proper coverage for the operator

*Optional equipment





REAL-TIME INTELLIGENCE SUPPORTING 24/7 UPTIME

Few machines work as hard and in as tough environments as the bigger wheel loaders. In order to keep stops as short and few as possible, Volvo provides warranties and service systems that are tailored to your machine and suited to the toughest imaginable operating conditions, thereby reducing downtime and maximizing uptime.

Service-friendliness means more time to work

Volvo assists you in your daily maintenance by providing simple and quick electronic checks of oil and fluid levels. All filters and service points are easily accessible. All the hatches are large and easy to open. Hydraulic couplings and quick-release connectors are conveniently grouped for fast and simple inspection.

To make correct decisions, you need information

Volvo has developed a telematic system, Care Track, which is based on an interactive exchange of information over a wireless network to monitor and control the machines' work in the field. This means that you can get all the necessary information you need about your machines in only seconds, even if you are hundreds of miles from the work site.

Let Contronic take control

The L350F's operation and performance are regulated by a built-in and highly reliable electronic network, Volvo Contronic. It works on three levels; the system keeps an eye on the machines' functions in real-time, and a service technician can connect his Contronic service tool to the system and troubleshoot directly on the site. All operational data is stored and can be used to analyze the machines' performance and trace its history since the most recent service. The machines' functions can be optimized according to changes in operating conditions via the Contronic service display and can be adapted to suite changing conditions.



Contronic electronic monitoring system

Over-riding 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 24 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

Easily accessible hatches and service points make service easier

Daily pre-start items are quickly checked and scheduled service items are conveniently grouped to ease machine serviceability and promote greater availability

Anti-slip service platforms, wide and angled cab ladders and conveniently located handrails provide safe movement around the machine





A MACHINE YOU CAN ALWAYS TRUST

Access and Serviceability

- Easily accessed hatches and service points
- Centralized, ground level lubrication banks and grouped pressure check connections
- Lubricated-for-life rear axle bearings
- Anti-slip service platforms, handrails, wide and angled cab ladders provide safety
- Long lubrication intervals allows more time for productive work

Volvo Lift Arm System

- Lift arm system provides superior breakout force throughout the lift cycle
- Increase in dump height increase loading efficiency
- Optimized attachment visibility and great rollback angles
- Dual pin seals prevent contamination of pins

Commitment to Volvo's Core Values: Quality, Safety and Care for the Environment

- Roll Over Protection System (ROPS) provides safe operation
- Non-return valves prevent leakage of both hydraulic and fuel tanks in case of roll over
- High quality breather filters on all major components
- Optional biodegradeable hydraulic oil allows environmentally-friendly operation
- All Volvo wheel loaders are more than 95% recyclable
- All electrical wiring routes through high quality conduits with encapsulated connectors

World-Class, Volvo Care Cab

- Larger, more spacious cab interior with large storage compartments
- Care Cab features the market's best cab filtering system
- Front pillar-mounted switches and in-cab adjustable bucket and boom detents
- Fully-adjustable operator's seat, armrest, lever carrier and steering column
- Improved allround visibility includes wide, laminated front windshield and floor-to-ceiling glass
- Viscous damping helps eliminates unwanted noise and vibration



Volvo Load-Sensing Hydraulics

- Electrohydraulic, load-sensing systems provide exact flow and pressure where and when it's needed
- Faster cycle times and increased lift force
- Speed-sensitive steering provides precision in any application
- End stroke dampening improves operator comfort, increases productivity and component reliability

Volvo Contronic Monitoring System

- Network monitors operation and performance in real-time
- The Contronic system warns the operator in time, troubleshoots for the service technician, and helps the machine owner to adapt the wheel loader to the application
- Fast and easy electronic level checks of oils and fluids
- Display shows continuous operating data, warning texts, and error messages
- Monitors fuel consumption, cycle times, and service intervals
- Available in 24 languages

Volvo Designed and Manufactured Engine

- Turbocharged Volvo V-ACT D16E, Tier 3/Stage IIIA approved
- D16E provides tremendous power and impressive low-end torque and couples excellent fuel economy, high reliability and durability with low levels of noise and exhaust emissions
- Engine control with overspeed protection for optimal performance in all operating conditions
- Hydrostatic drive, electronically controlled fan works only when needed, which saves fuel

Volvo HTE 400 Heavy-Duty Transmission

- Automatic Power Shift with automatic mode selector
- Fully Automatic Power Shift downshifts to first gear automatically
- Smooth shifting planetary transmission with automatic lock-up in third and fourth gears

Volvo AHW 90 Heavy-Duty Axles

- Dual-circuit service brakes and automatic parking brake application
- Outboard mounted wet disc brakes and planetary reductions
- Optional oil cooled brakes provide additional cooling maximizing
- Brake wear indicators on each hub simplifies monitoring of brake wear lining

Volvo Frames

- High quality steel provides stress resistance and operational stability
- Low vibration and incredibly quiet sound levels
- Well organized articulation joint provides visual appeal and reliability
- Upper and lower joints are designed to resist large forces



GROWTH IN HARMONY WITH THE ENVIRONMENT

Volvo's core values are quality, safety, and environmental care. We regard our commitment to the environment as a natural part of our entire operation, the goal of which is to maximize productivity and efficiency at the lowest possible cost and minimal environmental impact. With the L350F, you get one of the market's cleanest and most reliable wheel loaders.

Powerful, dependable, and environmentally optimized

With the new generation of diesel engines, Volvo has taken yet another giant stride ahead 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 of exhaust gas recirculation. This new engine makes the L350F more environmentally optimized, without affecting fuel consumption.

More than 95 percent 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 Program. For us, this is an obvious and natural part of our undertaking.

Quality

All major components including transmission, axles, fuel tank and hydraulic tank are well-protected from contamination with high quality breather filters only replaced every 2000 hours to ensure long machine life and prevent oil misting

All electrical wiring routes through high quality conduits with rubber encapsulated end connectors providing true protection from water, dust, vibration and abrasion

Extensive L350F reliability test program and improved component reliability standards ensures availability and greater productivity in the most demanding operating conditions

Safety

Dual circuit wheel braking system

Electronic brake testing in Contronic

The parking brake is activated automatically when the engine is switched off

The Volvo Care Cab has been tested and approved according to the requirements in ROPS ISO 3471 and FOPS ISO 3449

Non-return valves prevent leakage of both hydraulic and fuel tanks in case of roll over

Warning signs offer clear information in the form of symbols and illustrations

Optimized all round visibility gives effective control over the entire working area

All steps and platforms treated with an anti-slip surface, as well as well positioned handrails

Environment

Volvo wheel loaders are manufactured in environmentally certified factories according to ISO 14001

The Volvo D16E engine meets all existing emissions requirements according to Stage IIIA and Tier 3

The load-sensing hydraulic system contributes to low fuel consumption

Optional biodegradable hydraulic oil allows environmentally-friendly operation

All Volvo wheel loaders are more than 95% recyclable with all plastic parts are marked according to ISO standards to simplify recycling

Low interior and exterior noise levels

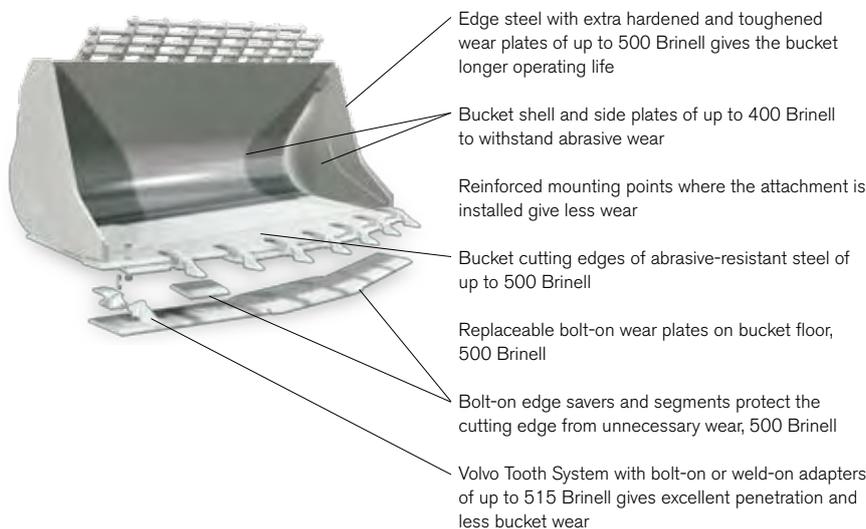


VOLVO GENUINE ATTACHMENTS – FOR A PERFECT MATCH

Volvo wheel loaders are renowned for their high quality and Volvo's genuine attachments offer exactly the same high quality. This is actually an absolute precondition for our machines to deliver what we promise – the highest possible productivity. Machines and attachments that are made for each other work best together.

Best penetration capability and long service life

Genuine Volvo attachments are durable and last up to three times as long as some other makes. This high quality stems partly from our long experience and partly from our close cooperation with some of the world's best material manufacturers. The high quality also applies to the bucket's wear parts. Their design and the materials from which they are made give Volvo's edge savers, teeth, and segments the best penetration capability, long service life, and short time for replacement of wear parts.



Spade nose rock bucket with teeth and segments



Straight edge rock bucket with teeth and segments



Side tip bucket bolt-on-edges



General purpose bucket with bolt-on-edges

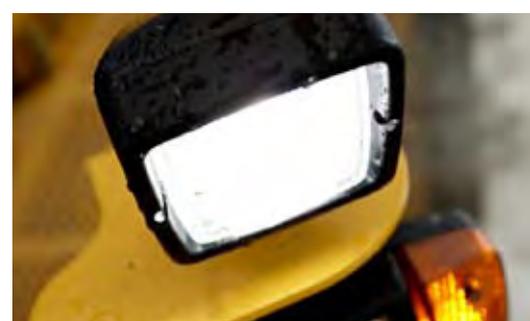


Light material bucket with bolt-on-edges



Block handling fork

VOLVO OPTIONAL EQUIPMENT BOOSTS YOUR PROFIT



Selection of Volvo optional equipment

Long boom

A long boom gives the extra dump height and reach necessary for loading high trucks or feeders. The additional reach also gives added protection when loading the bucket by keeping the machine further away from the material.

Boom Suspension System (BSS)

BSS utilizes gas/oil accumulators connected to the lift cylinders to absorb shocks and smooth out rough roads for faster cycle times, less spillage and increased operator comfort.

Comfort Drive Control (CDC)

CDC significantly reduces repetitive and tiring steering wheel movements. The operator can shift and steer easily with the aid of controls integrated in the left armrest.

Automatic Lubrication System

Our factory fitted Automatic Lubrication System takes care of greasing while the machine is in operation. This means less downtime for scheduled maintenance and more time for productive work.

Mudguards

Swing out rear mudguards – to protect the machine in extreme environment. Rearboarding possible.

Rearview camera system

Rearview camera system reduces blind spots and increases site safety when reversing and also improves operator comfort.

Limited slip

Volvo's limited-slip differentials provide dependable traction in tough underfoot conditions which lowers tire slip and simplifies operation

Engine air pre-cleaners

Volvo's own oil bath pre-cleaner is available for increased purification of the engine induction air. In addition to increased cleaning capacity, these air pre-cleaners lengthen service intervals, therefore reducing maintenance time.

Extra working lights

Night work is further simplified with the extra front and rear halogen lights which provides even greater uniform coverage for the operator.

VOLVO L350F IN DETAIL



Engine

Engine: V-ACT Stage III A/Tier 3, 16 liter, 6-cylinder in-line turbo-charged, air-to-air intercooler diesel engine with double rockers and Internal Exhaust Gas Recirculation (I-EGR). One piece cylinder head with four valves per cylinder and one overhead camshaft. The engine has wet replaceable cylinder liners and replaceable valve guides and valve seats. Mechanically actuated electronically controlled unit injectors. The throttle application is transmitted electrically from the throttle pedal. Air cleaning: Three stage cyclone pre-cleaner - primary filter - secondary filter. Cooling system: Hydrostatic, electronically controlled fan and intercooler of the air-to-air type.

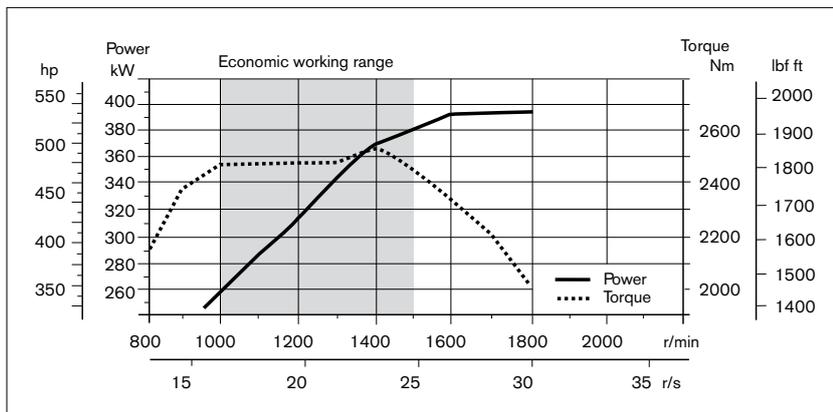
Engine	Volvo D16E LAE3
Max power at	28,3-30,0 r/s (1700-1800 r/min)
SAE J1995 gross	397 kW (540 hp)
ISO 9249, SAE J1349 net	394 kW (535 hp)
Max torque at	23,3 r/s (1400 r/min)
SAE J1995 gross	2550 Nm
ISO 9249, SAE J1349 net	2532 Nm
Economic working range	1000-1500 r/min
Displacement	16,1 l

Drivetrain

Torque converter: 3 element, 1 stage 1 phase torque converter with lock-up function and free wheel stator. Transmission: Planetary power shift transmission with full modulated electronically controlled shifting of 4 gears forward and reverse.

Volvo Automatic Power Shift (APS) gear shifting system with fully automatic shifting 1-4 (lock-up in 3-4) and mode selector with 4 different gear shifting programs, including AUTO mode. Axles: Fully floating axle shafts with planetary-type heavy duty hub reductions. Fixed front axle and oscillating rear axle. Optional: Limited-slip differentials in front and rear axle.

Transmission	Volvo HTE 400
Torque multiplication, stall ratio	2,65
Maximum speed, forward/reverse	
1st gear	6,8 / 7,5 km/h
2nd gear	12,1 / 13,2 km/h
3rd gear	21,0 / 22,9 km/h
4th gear	35,7 / 38,2 km/h
Measured with tires	35/65 R33 L4
Front axle/rear axle	Volvo AHW 90/AHW 90
Rear axle oscillation	±12°
Ground clearance at 12° osc.	550 mm





Electrical System

Central warning system: Contrinsic electrical system with central warning light and buzzer for following functions: - Serious engine fault - Low steering system pressure - Over speed warning engine - Interruption in communication (computer fault) Central warning light and buzzer with the gear engaged for the following functions. - Low engine oil pressure - High engine oil temperature - High charge air temperature - Low coolant level - High coolant temperature - High crank case pressure - Low transmission oil pressure - High transmission oil temperature - Low brake pressure - Engaged parking brake - Fault on brake charging - Low hydraulic oil level - High hydraulic oil temperature - Overspeeding in engaged gear - High brake cooling oil temperature front and rear axles.

Voltage	24 V
Batteries	2x12 V
Battery capacity	2x170 Ah
Cold cranking capacity, approx	1000 A
Reserve capacity	330 min
Alternator rating	2280 W/80 A
Starter motor output	7,0 kW (9,5 hp)

Brakes

Service brake: Service brakes are dual circuit all-hydraulic multi disc brakes with nitrogen charged accumulators and automatic slack adjusters. Outboard mounted oil-cooled, wet disc brakes at each wheel. Transmission declutch during braking can be preselected in Contrinsic. Parking brake: Wet multidisc type in transmission housing. Spring applied, electro hydraulically released via a switch on dash board. Applies automatically when the key is turned off. Secondary brake: Dual circuit axle-by-axle system. Actuated by service brake pedal. Low pressure alarm. Dead engine braking capability provided by three nitrogen-charged accumulators. Standard: The brake system complies with the requirements of ISO 3450:1996.

Number of brake discs per wheel	11
Accumulators	6x1,0 l
Accumulators for parking brake	1x0,5 l

Cab

Instrumentation: All important information is centrally located in the operator's field of vision. Display for Contrinsic monitoring system. Heater and defroster: Heater coil with filtered fresh air, fan with auto function and manually 11 steps, defroster vents for all window areas. Operator's seat: Operator's seat with adjustable suspension and retractable seatbelt. The seat is mounted on a bracket on the rear wall and floor. The forces from the retractable seatbelt are absorbed by the seat belts. 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").

Emergency exits	1
Sound level in cab according to ISO 6396	LpA 72 dB (A)
External sound level according to ISO 6395	LwA 111 dB (A)
Ventilation	9 m ³ /min
Heating capacity	13 kW
Air conditioning	8 kW

Lift arm system

Z-bar linkage system with high breakout forces. The lift arms are single plate construction with a high-strength steel cast cross-tube. The single-bell crank and bucket-link are nodular iron castings.

Lift cylinders	2
Cylinder bore	200 mm
Piston rod diameter	110 mm
Stroke	1264 mm
Tilt cylinder	1
Cylinder bore	260 mm
Piston rod diameter	120 mm
Stroke	728 mm

VOLVO L350F IN DETAIL



Hydraulic System

System supply: Two load-sensing axial piston pumps with variable displacement. The steering function always has priority from one of the pumps. Valves: Double-acting 2-spool valve. The main valve is controlled by an electric pilot. Lift function: The valve has three positions; raise, hold, and lower. 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; rollback, hold and dump. Inductive/magnetic automatic bucket positioner can be switched on and off. Cylinders: Double-acting cylinders for all functions. Filter: Full flow filtration through 20 micron (absolute) filter cartridge. Hydraulic oil cooler: Air cooled oil cooler mounted on radiator.

Working pressure maximum, pump 1	26,0 MPa
Flow at engine speed	354 l/min
Working pressure maximum, pump 2	25,0 MPa
Flow at engine speed	256 l/min
Cycle times	
Raise*	8,0 s
Tilt*	1,9 s
Lower, empty	4,7 s
Total cycle time	14,6 s

* with load as per ISO 14397 and SAE J818

Steering System

Steering system: Speed dependent electro hydraulic power steering system with closed center hydrostatic back-up. Pilot-operated hydraulic valves and non pressurized tank. System supply: The steering system has priority feed from a load-sensing axial piston pump with variable displacement.

Steering cylinders	2
Cylinder bore	110 mm
Rod diameter	70 mm
Stroke	586 mm
Working pressure	25,0 MPa
Maximum flow	354 l/min
Maximum articulation	±37°

Service

Service accessibility: Large, easy-to-open service doors with gas struts. Swing-out radiator grille. Fluid filters and component breather air filters promote long service intervals. Possibility to monitor, log and analyze data to facilitate troubleshooting.

Refill capacities	
Fuel tank (total)	660 l
Fuel, usable	620 l
Engine oil	40 l
Engine coolant	68 l
Transmission oil	79 l
Axle oil front/rear	155 l
Hydraulic oil tank	365 l

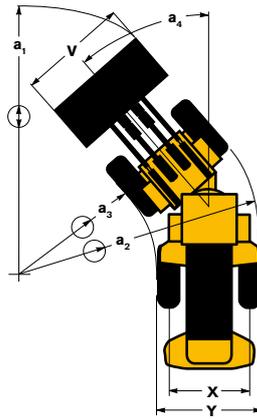


SPECIFICATIONS

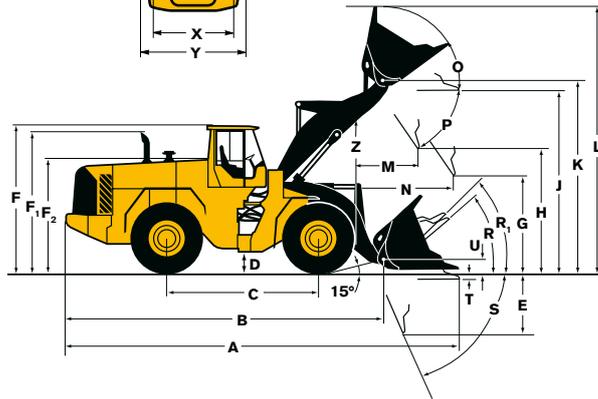
Tires: 35/65 R33 RL5K L5 Goodyear

	Standard boom	Long boom
B	9130 mm	9560 mm
C	4300 mm	-
D	550 mm	-
F	4180 mm	-
F ₁	3980 mm	-
F ₂	3220 mm	-
G	2130 mm	-
J	4920 mm	5400 mm
K	5340 mm	5810 mm
O	60 °	58 °
P _{max}	46 °	-
R	43 °	45 °
R ₁ *	49 °	50 °
S	66 °	72 °
T	120 mm	130 mm
U	660 mm	770 mm
V	3970 mm	-
X	2720 mm	-
Y	3630 mm	-
Z	4230 mm	4650
a ₂	8240 mm	-
a ₃	4610 mm	-
a ₄	±37 °	-

* Carry position SAE



Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 14397, SAE J818.



Supplemental Operating Data

35/65 R33 RL5K L5 Goodyear	Width over tires (mm)	Ground clearance (mm)	Operating weight (kg)	Static tipping load, full turn (kg)	
				Standard boom	Long boom
35/65 R33 XLD D1 L4 Michelin	+10	-20	-1140	-1030	-910
35/65 R33 XLD D2 L5 Michelin	+10	-20	-440	-580	-510
35/65 R33 X-Mine D2 L5 Michelin	+20	-20	+260	-50	-40

Type of boom	Type of bucket	ISO/SAE Bucket volume	Material density (t/m ³)									
			L350F	0,8	1,0	1,2	1,4	1,6	1,8	2,0		
Standard boom	General purpose	8,4 m ³						9,2	8,4			
	Rock	STE 6,9 m ³								6,9	6,6	
		SPN 6,9 m ³								6,9	6,6	
		SPN 7,7 m ³						7,7	7,3			
Light mtlr	12,7 m ³		12,7									
Long boom	General purpose	7,7 m ³						8,5	7,7			
	Rock	STE 6,9 m ³								6,9	6,6	
		SPN 6,5 m ³									6,5	6,2
		SPN 6,9 m ³									6,9	6,6
Light mtlr	12,7 m ³		12,7									
Bucket fill		110% 105% 100% 95%										

How to read bucket fill factor

Bucket Selection Chart

The volume handled varies with the bucket fill and is often greater than indicated by the bucket's ISO/SAE volume. The table shows optimum bucket choice with regard to the material density.

Material	Bucket fill, %	Material density, t/m ³
Earth	110 - 115	1,4 - 1,6
Clay	110 - 120	1,4 - 1,6
Sand	100 - 110	1,6 - 1,9
Gravel	100 - 110	1,7 - 1,9
Rock	75 - 100	1,5 - 1,9

STANDARD BOOM		ROCK									GENERAL PURPOSE	LIGHT MATERIAL
Tires 875/65 R33 RL5K L5 GY Pin-on buckets												
		Teeth	Teeth & Segments	Bolt-on edges	Teeth	Teeth & Segments	Bolt-on edges	Teeth & Segments	Bolt-on edges	Bolt-on edges	Bolt-on edges	
Volume, heaped ISO/SAE	m ³	6,6	6,9	6,9	6,8	6,9	6,9	7,7	7,7	8,4	12,7	
Static tipping load, straight	kg	40 030	39 060	39 340	38 920	38 230	38 730	37 810	38 330	38 810	37 830	
at 35° full turn	kg	35 710	34 780	35 060	34 640	33 950	34 460	33 550	34 070	34 550	33 560	
Breakout force	kN	504,7	472,8	474,8	392,6	372,3	373,9	356,8	358,3	419,1	376,4	
A	mm	10 990	11 070	10 740	11 430	11 500	11 180	11 600	11 270	10 970	11 160	
E	mm	1620	1670	1390	2000	2050	1770	2130	1850	1590	1760	
H*)	mm	3790	3720	3940	3500	3430	3650	3370	3590	3790	3640	
L	mm	7460	7460	7460	7430	7430	7430	7550	7550	7280	7730	
M*)	mm	1830	1790	1590	2160	2120	1920	2180	1980	1740	1890	
N*)	mm	2730	2680	2530	2980	2920	2790	2960	2830	2640	2700	
V	mm	3970	3970	3970	3970	3 970	3970	3970	3970	3970	4500	
a ₁ clearance circle	mm	18 090	18 100	17 960	18 310	18 320	18 170	18 370	18 210	18 060	18650	
Operating weight	kg	49 810	50 230	50 020	50 280	50 700	50 550	50 940	50 790	50 130	51 030	

*) 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°.)

Note: This only applies to Volvo original attachments.

LONG BOOM		ROCK									GENERAL PURPOSE	LIGHT MATERIAL
Tires 875/65 R33 RL5K L5 GY Pin-on buckets												
		Teeth	Teeth & Segments	Bolt-on edges	Teeth	Teeth & Segments	Bolt-on edges	Teeth & Segments	Bolt-on edges	Bolt-on edges	Bolt-on edges	
Volume, heaped ISO/SAE	m ³	6,2	6,5	6,5	6,4	6,5	6,5	6,9	6,9	7,7	12,7	
Static tipping load, straight	kg	37 810	36 950	37 220	36 860	36 210	36 670	35 960	36 420	36 810	35 590	
at 35° full turn	kg	33 620	32 800	33 070	32 700	32 050	32 520	31 810	32 280	32 660	31 450	
Breakout force	kN	471,7	442,4	443,6	365,9	347,6	348,5	338,1	339,1	396,8	341,2	
A	mm	11 370	11 430	11 110	11 790	11 860	11 540	11 920	11 600	11 300	11 580	
E	mm	1640	1690	1400	2040	2080	1790	2140	1850	1570	1830	
H*)	mm	4290	4220	4440	4010	3940	4160	3900	4120	4310	4130	
L	mm	7870	7870	7870	7850	7840	7840	7900	7900	7650	8200	
M*)	mm	1800	1770	1560	2120	2090	1890	2130	1930	1690	1910	
N*)	mm	3060	3010	2850	3310	3250	3110	3280	3140	2950	3050	
V	mm	3970	3970	3970	3970	3970	3970	3970	3970	3970	4500	
a ₁ clearance circle	mm	18 380	18 390	18 240	18600	18 610	18 450	18 640	18 480	18 330	18 960	
Operating weight	kg	51 320	51 740	51 530	51 790	52 210	52 060	52 330	52 180	51 580	52 660	

*) 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°.)

Note: This only applies to Volvo original attachments.

STANDARD EQUIPMENT

Service and maintenance

Engine oil remote drain and fill
Transmission oil remote drain and fill
Lubrication manifolds, ground accessible
Pressure test ports: transmission and hydraulic, quick connects grouped together
Tool box, lockable
Wheel nut wrench kit

Engine

Three stage air cleaner, pre-cleaner, primary and secondary filter
Indicator glass for coolant level
Preheating of induction air
Fuel pre-filter with water trap
Fuel filter
Crank case breather oil trap
Fan air intake protection

Electrical system

24 V, pre-wired for optional accessories
Alternator 24V/ 80A
Battery disconnect switch with removable key
Fuel gauge
Hour meter
Electric horn
Instrument cluster: <ul style="list-style-type: none"> • Fuel level • Transmission temperature • Coolant temperature • Instrument lighting
Reverse alarm
Lighting: <ul style="list-style-type: none"> • 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 (4 front and 4 rear)

Conronic monitoring system

Monitoring and logging of machine data
Conronic display
Fuel consumption
Ambient temperature
Clock
Brake test
Test function for warning and indicator lights
Warning and indicator lights: <ul style="list-style-type: none"> • Battery charging • Parking brake
Warning and display message: <ul style="list-style-type: none"> • Engine coolant temperature • Charge air temperature • Engine oil temperature • Engine oil pressure • Transmission oil temperature • Transmission oil pressure • Hydraulic oil temperature • Brake pressure • Parking brake applied • Parking brake NOT applied • Brake charging • Overspeed at direction change • Axle oil temperature • Steering pressure • Crank case pressure • Attachment lock open
Level warnings: <ul style="list-style-type: none"> • Fuel level • Engine oil level • Engine coolant level • Transmission oil level • Hydraulic oil level • Washer fluid level
Engine torque reduction in case of malfunction indication: <ul style="list-style-type: none"> • High engine coolant temperature • High engine oil temperature • Low engine oil pressure • High crank case pressure • High charge air temperature
Engine shutdown to idle in case of malfunction indication: <ul style="list-style-type: none"> • High transmission oil temperature • Slip in transmission clutches
Key pad, background lit
Start interlock when gear is engaged

Drivetrain

Automatic Power Shift with operator controlled declutch for transmission when braking and mode selector in AUTO mode
Fully automatic gear shifting, 1-4
PWM-controlled gear shifting
Torque converter lock-up
Automatic lock-up shifting, 3-4
Forward and reverse switch by hydraulic lever console
Indicator glass for transmission oil level

Brake system

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

Cab

ROPS (ISO 3471), FOPS (ISO 3449)
Acoustic inner lining
Ashtray
Cigarette lighter, 24 V power outlet
Lockable door
Cab heating with fresh air inlet and defroster
Fresh air inlet with two filters
Automatic climate control
Floor mat
Dual interior lights
Dual interior rear-view mirrors
Dual exterior rear-view mirrors
Sliding window, right side
Tinted safety glass
Operators seat, KAB, air suspended, heavy-duty
Lap-type retractable seatbelt (SAE J386)
Ergonomically heavy-duty operator's seat with adjustable position and suspension
Seat mounted adjustable lever console, working hydraulics
Adjustable steering wheel
Storage compartment
Document pocket
Sun visor
Beverage holder
Windshield washer front and rear
Windshield wipers front and rear
Interval function for front and rear wipers
Service platforms with anti-slip surfaces on front and rear fenders

Hydraulic system

Main valve, double acting 2-spool with electrical pilots
Variable displacement axial piston pumps (3) for: <ul style="list-style-type: none"> • Steering system, working hydraulics • Working hydraulics, brakes • Cooling fan, brakes
Electric-hydraulic control levers
Electric level lock
Boom kick-out, automatic, adjustable from cab
Return to dig, automatic, adjustable from cab
Bucket positioner, automatic, adjustable from cab
Double acting hydraulic cylinders with end damping
Indicator glass for hydraulic oil level
Hydraulic oil cooler

External equipment

Fenders, front with rubber extensions
Viscous cab mounts
Rubber engine and transmission mounts
Lifting eyes
Easy-to-open side panels and air shaft doors
Frame, joint lock
Vandalism lock prepared for <ul style="list-style-type: none"> • Batteries • Engine compartment • Radiator
Tie down eyes
Recovery eyes
Tow hitch

OPTIONAL EQUIPMENT

Service and maintenance

Tool kit
Automatic lubrication system
Automatic lubrication system for long boom
Refill pump for automatic lubrication system
Oil sampling valve

Engine

Air pre-cleaner, oil bath type
Air pre-cleaner, cyclone type
Engine block heater, 230 V
Engine auto shut down
Increased engine protection
Disabled engine protection
Hand throttle control
Fuel fill strainer
Fast fill fuel system
Fuel heater
Reversible cooling fan
High cooling performance (outside EU)
Radiator, charge air cooler, ACC-condenser, corrosion-protected

Electrical system

Alternator, 80 A with air filter
Alternator, 110 A
Battery, high capacity
Anti-theft device
Work lights front, high intensity discharge (HID)
Work lights front, on cab, dual
Work lights rear, on cab
Work lights rear, on cab, dual
Warning beacon, rotating
Reversing warning light, automatic

Contronic monitoring system

Remaining fuel and cooling efficiency information in display

Cab

Radio with CD player
Radio with cassette tape player
Radio installation kit incl. 11 A, 12 V outlet, left side
Radio installation kit incl. 11 A, 12 V outlet, right side
Rear-view camera incl. monitor, colour
Rear view mirrors, electrically adjustable and heated
Asbestos dust protection filter
Carbon filter
Automatic climate control panel, with Fahrenheit scale
Lunch box holder
Armrest (left) for KAB operator seat
Seat-belt, 3", (width 75 mm)
Steering wheel knob
Sun blind, rear window
Sun blind, side windows
Timer cab heating
Sliding window, door

Drivetrain

Limited slip differential, rear axle
Limited slip differential, front and rear axle
Speed limiter, 20 km/h
Speed limiter, 30 km/h

Brake system

Oil coolers for front and rear axles

Hydraulic system

Boom suspension system with single action lifting function
Artic kit, pilot hoses, brake accumulators and hydraulic oil
3rd Electro-hydraulic function
3rd Electro-hydraulic function for long boom
Hydraulic oil cooler, corrosion protected
Attachment bracket
Separate attachment locking
Biodegradable hydraulic fluid
Fire resistant hydraulic fluid
Hot climate hydraulic fluid

External equipment

Long boom
Fenders rear, full covered, swing out, rear boarding ladder

Protective equipment

Guards for front head lights
Guards for tail lights
Guards for tail lights, heavy-duty
Guards for rear work lights
Guards for radiator grill
Windows, side and rear guards
Windshield guard
Bellyguard front
Bellyguard rear

Other equipment

Comfort Drive Control (CDC)
Secondary steering with automatic test function
Logger version
Block handler kit
Block handler kit, heavy-duty
CE-marking
Sound decal, EU

Tires and Rims

35/65 R33 (875/65 R33):
• L4
• L5
Rims, 33-28.00/3,5:
• Five piece
• Five piece, wood protected
• Five piece, heavy-duty

Attachments

Buckets (pin-on):
• Rock, straight edge
• Rock, spade nose
• General purpose, straight edge
• Light material
Wear parts:
• Adapters for teeth, bolt-on and weld-on
• Teeth
• Segments, bolt-on
• Edge savers, bolt-on
Block handling equipment (hook-on):
• Rock bucket
• Stone fork
• Breaker tine
• Rake
Log grapples



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