VOLVO



Volvo Wheel Loaders 18-20.7 t 256 hp

L110H

Volvo Construction Equipment

L110H

With high breakout force, ultimate parallel movement and easy bucket filling, this medium sized 20-tonne wheel loader is ready to tackle a range of applications.



Made to move

The second generation of Volvo L110H Wheel Loader is as versatile, fuel efficient and reliable as its forerunner but it comes with a batch of improvements that increase availability. A new Volvo engine and power strategy, plus a host of maintenance-friendly features trigger benefits for the operators, service technicians and machine owners.



Fuel efficiency

- Second generation OptiShift with lockup (option)
- Reverse By Braking
- Rimpull control
- Eco pedal
- Dry P-brake



Loaded for versatility

- Unique Torque Parallel linkage
- Range of matched Volvo Attachments
- Custom built attachments
- Tailored application packages



Operator comfort

- Removed main switch, ignition key activates and powers the machine
- Choice of single or multi levers
- Choice of three hydraulic response modes
- Auto bucket leveling function
- Comfort Drive Control (option)
- Premium seat (option)



Load Assist (option)

- On-Board Weighing
- Operator Coaching
- Tire Pressure Monitoring System
- When fitted, Radar detect system, Rear-view camera and Collision Mitigation System are integrated into the Volvo Co-Pilot display



Uptime

- Auto engine regeneration while working
- 1 000 hr engine service interval
- Removed main switch = no risk of flat battery because left on
- Delayed engine shutdown reduces wear (option)



Serviceability

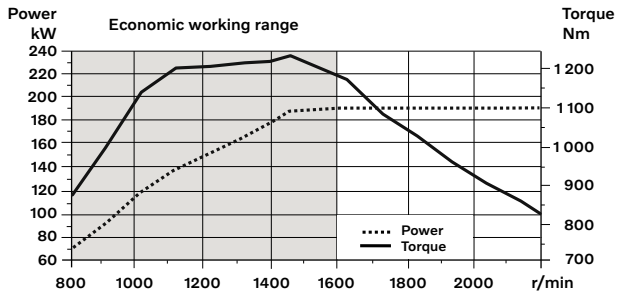
- Electric fuel priming pump
- Lockout-tagout (LOTO) on service switch
- Electrically-operated engine hood with large opening
- Slidable cooler installation
- Drain/fill connector for hydraulic oil
- Brake wear indicators

Volvo L110H in detail

Engine

8 liter, 6-cylinder in-line turbocharged diesel engine with an advanced common rail fuel injection system. Fuel is distributed under high pressure from a high-pressure accumulator. One camshaft-driven high pressure pump delivers the fuel to the rail and then to the electronically operated fuel injectors via high pressure pipes.
The engine meets all emission requirements and comply with Stage V emission legislation by the help of the exhaust after treatment system (EATS) which contains the diesel oxy-catalyst (DOC) and diesel particulate filter (DPF) for regeneration, urea injector, mixing chamber,SCR and slipcat for reduction of NOx. The reduction of NOx is assisted by the use of cooled exhaust gas recirculation (EGR) as well.

Engine	Volvo	D8M
Max. power at	rpm	1 500 - 2 240
ISO 14396 gross	kW	191
	hp	256
ISO 9249, SAE J1349 net	kW	191
	hp	256
Max. torque at	rpm	1 450
ISO 14396 gross	Nm	1 246
ISO 9249, SAE J1349 net	Nm	1 246
Economic working range	rpm	800 - 1 600
Displacement	lit	7.8



Drivetrain

Torque converter: Single-stage.
Transmission: Volvo countershaft transmission with single lever control. Fast and smooth shifting of gears with Pulse Width Modulation (PWM) valve.
Transmission: Volvo Automatic Power Shift (APS) with fully automatic shifting 1-4 and mode selector with 4 different gear shifting programs, including AUTO. Also equipped with Rimpull control to avoid wheel spin and optimize bucket filling. OptiShift transmission is also available as an option (HTL 206E).
Axles: Volvo fully floating axle shafts with planetary hub reductions and cast steel axle housing. Fixed front axle and oscillating rear axle. 100% differential lock on the front axle. Optional: Limslip rear.

Transmission		HTE 206F
Torque multiplication, stall ratio		2.47:1
Maximum speed, forward/reverse		
1st gear	km/h	7.3
2nd gear	km/h	13.7
3rd gear	km/h	28.4
4th gear	km/h	40
Measured with tires		750/65R25
Front axle/rear axle		AWB 31/ AWB 30
Rear axle oscillation	±°	13
Ground clearance	mm	460
at oscillation	°	13

Electrical System

Central warning system: Contronic 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	V	24
Batteries	V	2 x 12
Battery capacity	Ah	2 x 170
Cold cranking capacity, approx	A	1 000
Alternator rating	W/A	3 640 / 130
Starter motor output	kW	5.5

Brake System

Service brake: Volvo dual-circuit system with nitrogen charged acculmulators. Outboard mounted hydraulically operated, fully sealed oil circulation cooled wet disc brakes. The operator can select automatic declutch of the transmission when braking by selecting the setting in the contronics.
Parking brake: Dry disc brake. Applied by spring force, electro-hydraulic release with a switch on the instrument panel.
Secondary brake: Dual brake circuits with rechargeable accumulators. One circuit or the parking brake fulfills all safety requirements.
Standard: The brake system complies with the requirements of ISO 3450.

Number of brake discs per wheel		1
Accumulators	lit	3 x 1.0
Accumulators for parking brake	lit	1 x 1.0

Cab

Instrumentation: All important information is centrally located in the operator's field of vision. Display for Contronic monitoring system.
Heater and defroster: Heater coil with filtered fresh air and fan with auto and manual settings (11 speeds). Defroster vents for all window areas.
Operator' seat: Operator's seat with adjustable air suspension and retractable seatbelt. The seat is mounted on a bracket on the rear cab wall and floor. The forces from the retractable seatbelt are absorbed by the seat rails.
Standards: The cab is tested and approved according to ROPS (ISO 3471, SAE J1040), FOPS (ISO 3449). The cab meets with requirements according to SAE J386 ("Operator Restraint System"). Refrigerant of the type R134a is used when this machine is equipped with air conditioning. Contains fluorinated greenhouse gas R134a, Global Warming Potential 1.430 t CO_2-eq.

Emergency exit: Use emergency hammer to break window

Ventilation	m³/min	9
Heating capacity	kW	16
Air conditioning (optional)	kW	7.5

Lift Arm System

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

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

Hydraulic System

System supply: Two load-sensing axial piston pumps with variable displacement. The steering system always has priority.
Valves: Double-acting 2-spool valve. The main valve is controlled by a 2-spool pilot valve.
Lift function: The valve has four positions; raise, hold, lower and floating position. Inductive/magnetic automatic boom kickout can be switched on and off and is adjustable to any position between maximum reach and full lifting height.
Tilt function: The valve has three functions including rollback, hold and dump. Inductive/magnetic automatic tilt can be adjusted to the desired bucket angle.
Cylinders: Double-acting cylinders for all functions
Filter: Full flow filtration through 10 micron (absolute) filter cartridge.

Working pressure maximum, pump 1 for working hydraulic system	MPa	27.0 ± 0.5
Flow	l/min	128
at	MPa	10
engine speed	rpm	1 900
Working pressure maximum, pump 2 for steering-, brake-, pilot- and working hydraulic system	MPa	29.0 ± 0.5
Flow	l/min	128
at	MPa	10
engine speed	rpm	1 900
Working pressure maximum, pump 3 for brake- and cooling fan system	MPa	21.0 ± 0.5
Flow	l/min	33
at	MPa	10
engine speed	rpm	1 900
Pilot system, working pressure	MPa	3.5 ± 0.5
Cycle times		
Lift	s	5.4
Tilt	s	2.1
Lower, empty	s	2.5
Total cycle time	s	10

Raise and tilt cycle times with load according to ISO 14397

Steering System

Steering system: Load-sensing hydrostatic articulated steering.
System supply: The steering system has priority feed from a load-sensing axial piston pump with variable displacement.
Steering cylinders: Two double-acting cylinders.

Steering cylinders		2
Cylinder bore	mm	75
Rod diameter	mm	50
Stroke	mm	486
Working pressure	MPa	26.5
Maximum flow	l/min	128
Maximum articulation	±°	40

Service Refill

Service accessibility: Electrically openable engine hood with large opening angle giving excellent access to the engine compartment. Fluid filters and component breather air filters promote long service intervals. A quick-fit adapter on the hydraulic tank provides faster hydraulic oil fill.Possibility to monitor, log and analyze data to facilitate troubleshooting.

Fuel tank	lit	270
DEF/AdBlue® tank	lit	31
Engine coolant	lit	38
Hydraulic oil tank	lit	140
Transmission oil	lit	38
Engine oil	lit	30
Axle oil front	lit	36
Axle oil rear	lit	41

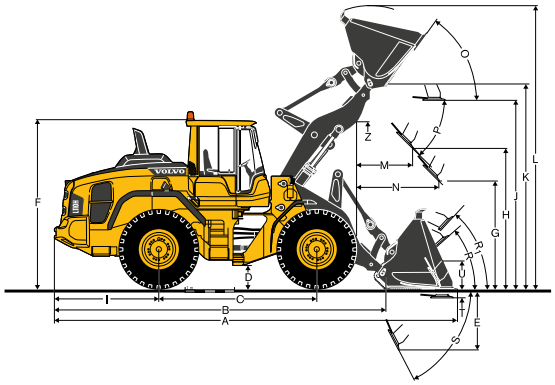
Sound Level

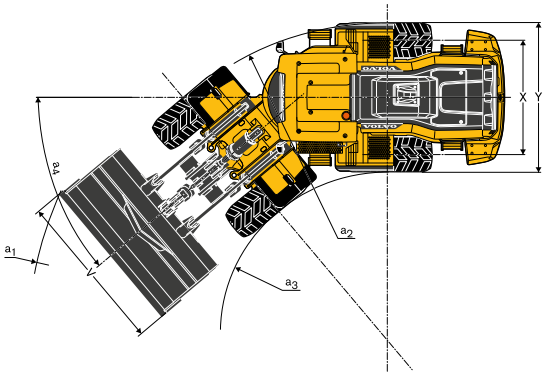
Sound level in cab according to ISO 6396 - L_{pA}	dB	68
External sound level (ISO 6395 and EU Noise Directive 2000/14/EC) - L_{WA}	dB	106

Specifications

DIMENSIONS			
Tires 23.5 R25 L3		L110H	
		Standard boom	Long boom
B	mm	6 550	7 080
C	mm	3 200	3 200
D	mm	440	430
F	mm	3 380	3 380
G	mm	2 131	2 133
I	mm	2 120	2 120
J	mm	3 710	4 220
K	mm	4 030	4 550
O	°	55	74
P_{max}	°	50	47
R	°	41	41
R_1*	°	43	47
S	°	66	43
T	mm	95	106
U	mm	430	560
X	mm	2 070	2 070
Y	mm	2 670	2 670
Z	mm	3 340	3 330
a_2	mm	5 730	5 730
a_3	mm	3 060	3 060
a_4	±°	40	40

With 3.0 m³ STE H T bucket



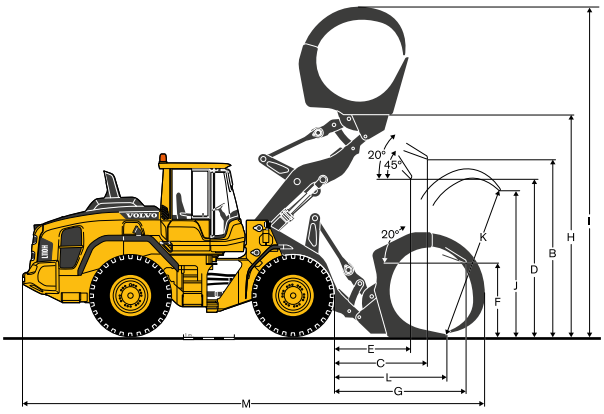


* Carry position SAE

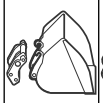
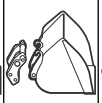
Where applicable, specifications and dimensions are according to ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 14397, SAE J818.

L110H Log Loader
Grapple: WLA80832
Operating weight
(incl. logging cw 685 kg): 20 070 kg
Operating load: 6 500 kg

Dimensions		
		L110H
		Tires: 750/65 R25
A	m²	2.4
B	mm	3 480
C	mm	1 850
D	mm	2 860
E	mm	1 460
F	mm	1 530
G	mm	2 720
H	mm	4 600
I	mm	6 630
J	mm	2 790
K	mm	2 990
L	mm	2 050
M	mm	8 830



L110H

Tires 23.5R25 XHA2 L3		REHANDLING*		GENERAL PURPOSE				ROCK**	LIGHT MATERIAL		LONG BOOM***
											
		3.5 m³ STE P BOE	3.5 m³ STE H BOE	3.0 m³ STE P T	3.0 m³ STE H T	3.4 m³ STE P BOE	3.4 m³ STE H BOE	2.7 m³ SPN P T SEG	5.5 m³ LM H	9.5 m³ LM H	3.0 m³ STE H T
Volume, heaped ISO/SAE	m³	3.5	3.5	3.0	3.0	3.4	3.4	2.7	5.5	9.5	3.0
Volume at 110% fill factor	m³	3.9	3.9	3.3	3.3	3.7	3.7	3.0	6.1	10.5	3.3
Static tipping load, straight	kg	14 790	14 100	13 860	13 150	13 580	12 920	13 820	12 060	12 160	-530
at 35° turn	kg	13 150	12 500	12 340	11 670	12 080	11 470	12 260	10 640	10 700	-520
at full turn	kg	12 660	12 030	11 890	11 240	11 630	11 040	11 800	10 220	10270	-530
Breakout force	kN	173.1	160.0	179.7	165.5	171.5	158.5	153.0	123.1	107.3	+3
A	mm	8 040	8 150	8 110	8 220	8 060	8 160	8 390	8 580	8 880	+510
E	mm	1 220	1 320	1 280	1 380	1 230	1 330	1 520	1 700	1 960	-310
H	mm	2 820	2 750	2 780	2 710	2 810	2 740	2 600	2 420	2 210	+510
L	mm	5 580	5 650	5 430	5 490	5 500	5 570	5 540	5 840	6 010	+520
M	mm	1 170	1 250	1 220	1 300	1 180	1 260	1 400	1 520	1 730	-40
N	mm	1 720	1 760	1 740	1 780	1 720	1 760	1 810	1 800	1 810	+440
V	mm	3 000	3 000	2 880	2 880	2 880	2 880	2 880	3 000	3 400	0
a_1 clearance circle	mm	12 930	12 980	12 860	12 910	12 830	12 880	13 040	13 260	13 810	+480
Operating weight	kg	19 360	19 580	18 520	18 750	18 580	18 800	19 710	19 260	19 480	+250

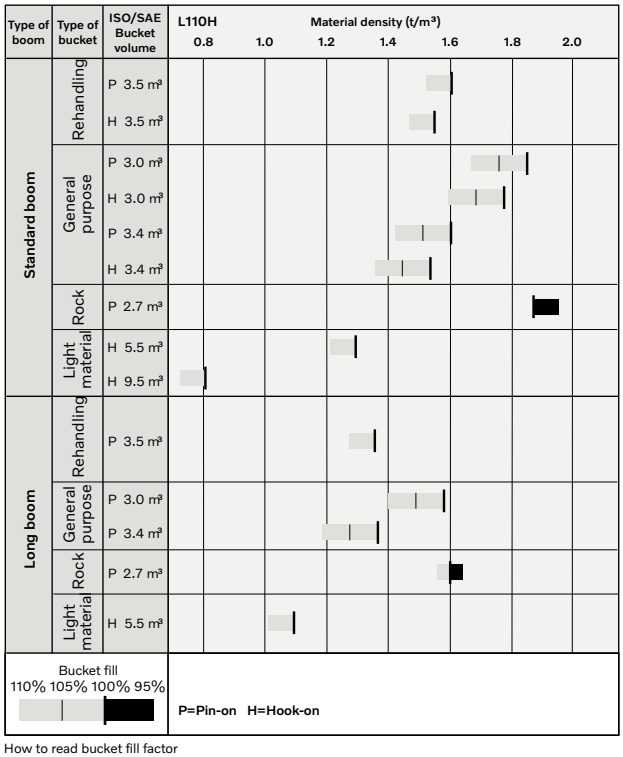
* Measured with additional rehandling counterweight | ** With MICHELIN 23,5R25 XMINE D2 Pro L5 Tire | *** Compared to GP 3.0 m³ STE H T bucket

Bucket Selection Chart

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

Material	Bucket fill, %		Material density, t/m³	ISO/SAE bucket volume, m³	Actual volume, m³
Earth/Clay	~ 110		1.8 1.6	3.0 3.4	3.3 3.7
Sand/ Gravel	~ 105		1.8 1.6	3.0 3.4	3.2 3.6
Aggregate	~ 100		1.8 1.6	3.5	3.5
Rock	≤100		1.7	2.7	2.7

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



How to read bucket fill factor

Supplemental Operating Data

Tires 23.5 R25 L3		Standard boom		Long boom
		23.5 R25 L5	750/65 R25	750/65 R25
Width over tires	mm	+30	+200	+200
Ground clearance	mm	+50	0	0
Tipping load, full turn	kg	+490	+430	+310
Operating weight	kg	+670	+640	+640

Equipment

STANDARD EQUIPMENT
Engine
Exhaust after-treatment system
Three stage air cleaner, pre-cleaner, primary and secondary filter
Indicator for coolant level
Preheating of induction air
Fuel pre-filter with water trap
Fuel filter
Electric fuel prime pump
Crankcase breather oil trap
Exterior radiator air intake protection
Drivetrain
Automatic Power Shift
Fully automatic gearshifting, 1-4
PWM-controlled gearshifting
Forward and reverse switch by hydraulic lever console
Rimpull control
Indicator glass for transmission oil level
Differentials: Front, 100% hydraulic diff lock. Rear, conventional.
Electrical system
24 V, pre-wired for optional accessories
Alternator 24 V / 130 A / 3 479 W
Battery disconnect (service) switch
Fuel gauge
Hour meter
Electric horn
Instrument cluster:
Fuel level
Diesel Exhaust Fluid/AdBlue level
Transmission temperature
Coolant temperature
Instrument lighting
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)

STANDARD EQUIPMENT
Contronic monitoring system
Monitoring and logging of machine data
Contronic display
Fuel consumption
Diesel Exhaust Fluid / AdBlue consumption
Ambient temperature
Clock
Test function for warning and indicator lights
Brake test
Test function, sound level at max fan speed
Warning and indicator lights:
Battery charging
Parking brake
Warning and display message:
Regeneration
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
Brake charging
Overspeed at direction change
Axle oil temperature
Steering pressure
Crankcase pressure
Attachment lock open
Safety Belt Warning
Level warnings:
Fuel level
Diesel Exhaust Fluid/AdBlue level
Engine oil level
Engine coolant level
Transmission oil level
Hydraulic oil level
Washer fluid level
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
Keypad, background lit
Start interlock when gear is engaged

STANDARD EQUIPMENT
Hydraulic System
Main valve, double acting 2-spool with hydraulic pilots
Variable displacement axial piston pumps (3) for:
1 Working hydraulics, Pilot hydraulics and Brake system
2 Working hydraulics, Pilot hydraulics, Steering and Brake system
3 Cooling fan and Brake system
Secondary steering with automatic test function
Quick hydraulic oil fill
Electro-hydraulic servo controls
Electronic hydraulic lever lock
Automatic boom kick-out
Automatic bucket positioner
Double-acting hydraulic cylinders
Indicator glass for hydraulic oil level
Hydraulic oil cooler
Brake system
Dual brake circuits
Dual brake pedals
Secondary brake system
Parking brake, electro-hydraulic
Brake wear indicators
Cab
ROPS (ISO 3471), FOPS (ISO 3449)
Harness Anchor Points
Single key kit door/start
Acoustic inner lining
Cigarette lighter, 24 V power outlet
Lockable door
Cab heating with fresh air inlet and defroster
Fresh air inlet with two filters
Automatic heat control
Floor mat
Dual interior lights
Interior rear-view mirrors
Dual exterior rear-view mirrors
Sliding window, right side
Tinted windshield glass
Retractable seatbelt (SAE J386)
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

STANDARD EQUIPMENT
Service and Maintenance
Engine oil remote drain and fill
Transmission oil remote drain and fill
Lubrication manifolds, ground accessible
Pressure check connections: transmission and hydraulic, quick-connects
Quick-fit hydraulic oil fill
Tool box, lockable
External equipment
Orange hand rails
Fenders, front and rear
Viscous cab mounts
Rubber engine and transmission mounts
Frame, joint lock
Vandalism lock prepared for:
Engine compartment
Radiator grille
Lifting eyes
Tie-down eyes
Fabricated counterweight
Counterweight, pre-drilled for optional guards

Equipment

OPTIONAL EQUIPMENT
Engine
Air pre-cleaner, cyclone type
Air pre-cleaner, oil-bath type
Air pre-cleaner, turbo type II
Air pre-cleaner, turbo type III
Engine auto shutdown
Engine delayed shutdown
Engine block heater
Fuel fill strainer
Fuel heater
Hand throttle control
Max. fan speed, hot climate
Radiator, corrosion-protected
Reversible cooling fan
Reversible cooling fan and axle oil cooler
Wheels and tires
23.5 R25
750/65 R25
Drivetrain
Oil cooler and filter front & rear axle
OptiShift transmission with Lock-up RBB
Diff lock front 100%, Limited Slip rear
Agri power-shift / lock-up 1-4
Speed limiter
Stainless steel, brake lines

OPTIONAL EQUIPMENT
Electrical system
Anti-theft device
Halogen Economy package
Halogen Feature package
Halogen Power package
Headlights, assymetric left, halogen
Working lights, attachments, halogen
LED Economy package
LED Feature package
LED Power package
LED Intense package
Alarm kit, anti-theft function in WECU
Battery disconnect switch, additional in cab
Emergency stop
Locking device, Tag out Lock out
License plate holder, lighting
Rear view camera, monitor
Rear view mirrors, el.adjusted and heated
Rear view mirrors, long arm right
Rear view mirrors, el.adjusted and heated, long arm right
Reduced function working lights, reverse gear activated
Reverse alarm, audible
Reverse alarm, white noise
Dual LED reversing strobe lights
Seatbelt indicator, external
Shortened headlight support brackets
Side marker lamps
Warning beacon LED
Warning beacon LED automatic
Electrical distribution unit 24 volt
Load Assist
Radar detect system
Collision Mitigation System
Forward camera
Dual forward cameras
Parking brake alarm, audible for air susp seats
Jump start connector, ISO-Type
Max Boom height
Can Bus Interface
Delayed Engine Shutdown
Co-Pilot available
Rearview camera in Co-Pilot
OnBoard Weighing
OnBoard Weighing Task Mode
Tire pressure monitoring system
Connected Map
Operator Coaching Start
Operator Coaching Advanced
Hydraulic System
Boom suspension system
Separate attachment locking
Arctic kit, attachment locking hoses
Boom cylinder hose and tube guards
Hydraulic fluid, biodegradable, Volvo
Hydraulic fluid, fire-resistant
Hydraulic fluid, for hot climate
Hydraulic 3rd function
Hydraulic 3rd-4th function
Hydraulic constant flow control with detent for 3rd function
Single lever control, hydraulics 2 functions
Single lever control, hydraulics 3 functions
Single lever control, hydraulics 4 functions

OPTIONAL EQUIPMENT
Cab
Anchorage for Operator's manual
Automatic Climate Control, ACC
ACC control panel, with Fahrenheit scale
Asbestos dust protection filter
Ashtray
Cab air pre-cleaner, cyclone type
Carbon filter
Cover plate, under cab
Lunch box holder
Volvo Armrest, operator's seat, left
Operator's seat, Mechanical ISRI, 2pt seat belt
Operator's seat, Volvo Air Suspension, Heavy Duty, 2pt seat belt
Operator's seat, Volvo Air Suspension, 2pt seat belt
Operator's seat, Volvo Air Suspension, 3pt seat belt
Operator's seat, Comfort ISRI, 2pt seat belt
Operator's seat, Comfort ISRI, 3pt seat belt
Operator's seat, Premium ISRI, 2pt seat belt
Operator's seat, Premium ISRI, 3pt seat belt
Radio installation kit incl. 12 volt outlet, left side
Radio installation kit incl. 12 volt outlet, right side
Radio (with AUX, Bluetooth and USB connection)
DAB Radio
Subwoofer
Steering wheel knob
Sun blinds, rear windows
Sun blinds, side windows
Timer cab heating
Window, sliding, door
Universal door/ignition key
Remote door opener
Forward view mirrors
Cab heater power outlet 240 V
Cab, Hot applications. Roof, steel
Fire extinguisher cab
Outside steel protection cab
Rear view mirrors long arm, cab
Reinforced windshield, flat
Service and Maintenance
Automatic lubrication system
Automatic lubrication system for long boom
Grease nipple guards
Oil sampling valve
Refill pump for grease to lube system
Tool kit
Wheel nut wrench kit
CareTrack, GSM, GSM/Satellite
Telematics, Subscription

OPTIONAL EQUIPMENT
Protective equipment
Belly guard front
Belly guard rear
Cover plate, heavy-duty, front frame
Cover plate, rear frame
Cover plate, front/rear axle
Cab roof, heavy-duty
Guards for front headlights
Guards for radiator grill
Guards for tail lights
Windows, side and rear guards
Windshield guard
Wheel/axle seal guards
Corrosion protection, painting of machine
Corrosion protection, painting of attachment bracket
Bucket Teeth protection
External equipment
Cab ladder, rubber-suspended
Deleted front mudguards & wideners rear
Handles on counterweight
Fire suppression system
Mudguards, full cover, rear for 80-series tires
Mudguards, full cover, rear for 65-series tires
Long boom
Tow hitch
Other equipment
CE-marking
Comfort Drive Control (CDC)
Counterweight, logging
Counterweight, signal painted, chevrons
Sound decal, EU
Sound decal, USA
Reflecting stickers (decals), machine contour
Reflecting stickers (stripes), machine contour Cab
Option for machines without dinitrol
Noise reduction kit, exterior
Sign, slow moving vehicle
Sign, 50 km/h
Agriculture package
Log Loader package
Rehandling package
Scrap Handler package
Waste Handler package
Attachments
Buckets:
Rock straight or spade nose
General purpose
Rehandling
Light material
High tip
Grading
Wear parts:
Bolt-on and weld-on bucket teeth
Segments
Cutting edge in three sections, bolt-on
Fork equipment
Material handling arm
Log grapples
Snow plows
Spreading bucket
Sweepers

Not all products are 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.