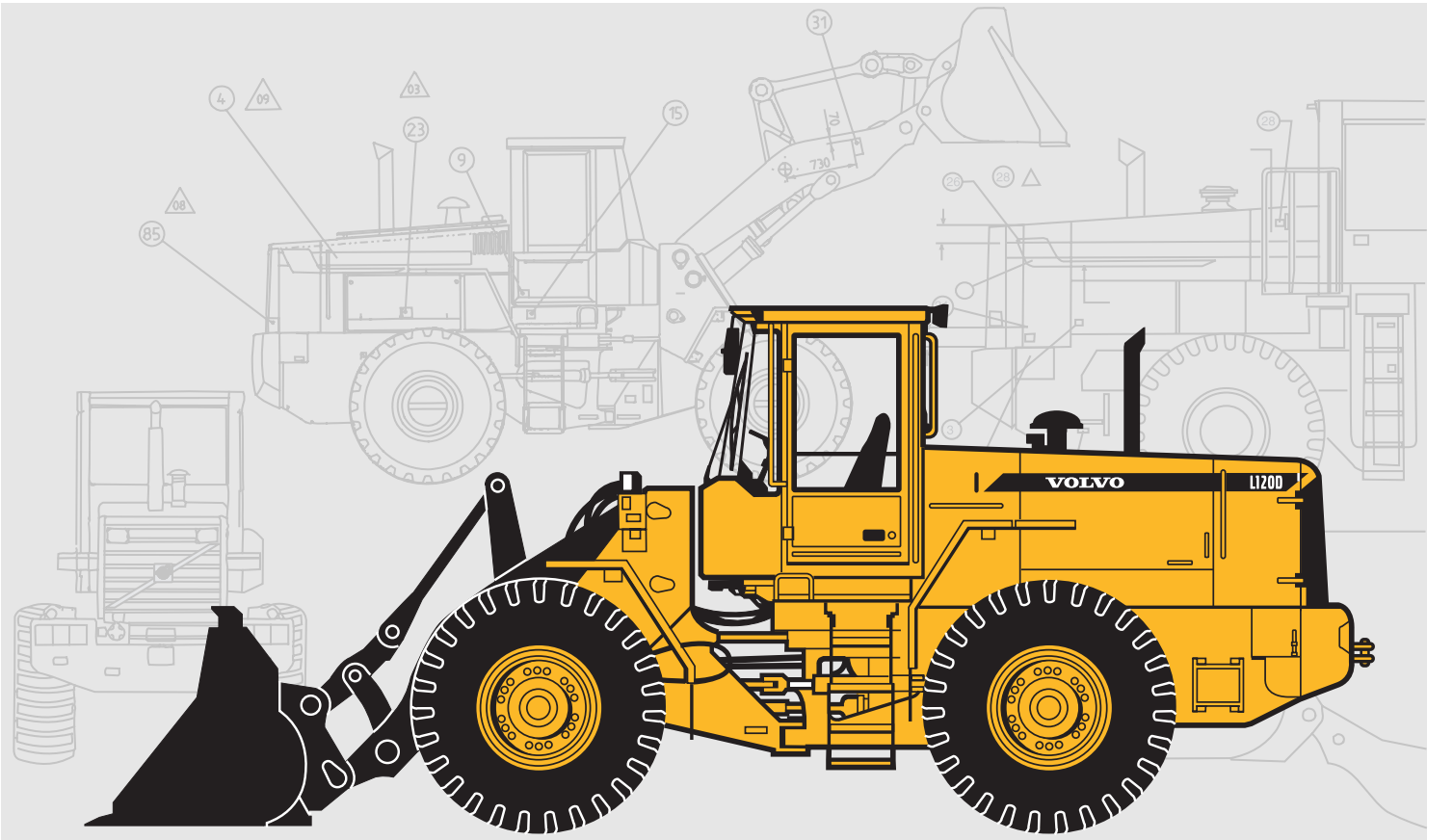
VOLVO WHEEL LOADER

L120D



- **Engine output SAE J1995:**
  gross 153 kW (208 hp)
  ISO 9249, SAE J1349
  net 148 kW (201 hp)
- **Operating weight:** 18,4–20,6 t
- **Buckets:** 3,0–9,5 m^3
- **Volvo high performance-low emission engine**
  – with excellent low rpm performance
  – meets all exhaust emission regulations for off-road vehicles
- **Volvo transmission with APS II**
  – 2nd generation Automatic Power Shift with mode selector
  – optimizes performance
- **Wet disc brakes**
  – fully sealed, oil-circulation cooled
  – outboard mounted
- **Torque Parallel Linkage**
  – high breakout torque throughout the working range
  – excellent parallel lift-arm action
- **Care Cab II**
  – pressurized cab with high comfort and safety
- **Contronic II monitoring system**
- **Load-sensing steering system**
- **Pilot-operated working hydraulics**

Optional Equipment

- Hydraulic attachment bracket
- Long Boom
- Boom Suspension System
- Comfort Drive Control

VOLVO

SERVICE REFILL CAPACITIES

The Contronic II monitoring system provides information on scheduled service intervals and machine condition. Minimizes time required for troubleshooting.

Service accessibility: Large, easy-to-open engine access doors with gas struts. Hinged radiator grille and radiator.

Fuel tank	255 l	Transmission	35 l
Engine coolant	65 l	Engine oil	24 l
Hydraulic tank	145 l	Axle front / rear	36/41 l

ENGINE

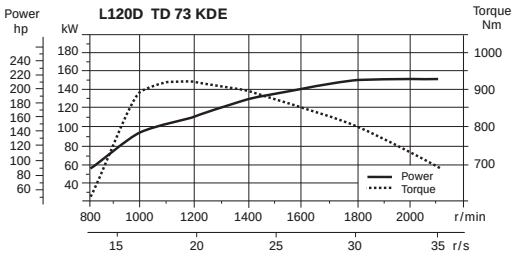
The Volvo engine offers high torque and quick response at low rpm. The machine operates efficiently at low engine speeds which contributes to good fuel economy, less noise, reduced wear and longer life.

Engine: 6-cylinder, in-line, direct-injected, turbocharged, intercooled 4-stroke diesel engine with wet replaceable cylinder liners.

Air cleaning: three-stage.

Engine	Volvo TD 73 KDE	
Max. power at	35 r/s	(2 100 r/min)
SAE J1995 gross	153 kW	(208 hp)
ISO 9249, SAE J1349 net.	148 kW	(201 hp)
ISO 9249, SAE J1349 net.	151 kW	(205 hp)*
Max. torque at	18,3 r/s	(1 100 r/min)
SAE J1995 gross	925 Nm	
ISO 9249, SAE J1349 net.	920 Nm	
Displacement	6,7 l	

** With optional EU noise reduction kit*



ELECTRICAL SYSTEM

Contronic II monitoring system with increased function control. Electrical system with circuit boards, well protected by fuses. The system is pre-wired for installation of optional equipment.

Central warning system: Central warning light for the following functions, (buzzer with gear engaged): Engine oil pressure, transmission oil pressure, brake pressure, parking brake, axle oil temperature, steering system pressure, coolant temperature, transmission oil temperature, hydraulic oil temperature, overspeeding in engaged gear, brake charging, computer malfunction.

Voltage	24 V
Batteries	2x12 V
Battery capacity	2x140 Ah
Cold cranking capacity, ea	1050 A
Reserve capacity, ea	290 min
Alternator rating	1 680 W / 60 A
Starter-motor output	5,4 kW (7,3 hp)

DRIVETRAIN

The drivetrain and working hydraulics are well-matched and of reliable design. Quick acceleration increases productivity. Extensive Volvo component coordination facilitates service work.

Torque converter: Single-stage

Transmission: Volvo Power Shift transmission of countershaft type with single lever control. Fast and smooth forward / reverse shifting.

Shifting system: Volvo Automatic Power Shift (APS II) with mode selector.

Axles: Volvo, fully floating axle shafts with planetary-type hub reductions. Cast-steel axle housing. Fixed front axle and oscillating rear axle. 100 % differential lock on front axle.

Transmission	Volvo HT 205
Torque multiplication	2,85:1
Speeds, max forward/reverse	
1	7,3 km/h
2	13,3 km/h
3	25,2 km/h
4	35,5 km/h
Measured with tires	23.5 R25* L2
Front axle	Volvo / AWB 31
Rear axle	Volvo / AWB 30
Oscillation, rear axle	±13°
Ground clearance at 13° oscillation	460 mm

BRAKE SYSTEM

A simple and reliable brake system with few moving parts. Self-adjusting oil circulation cooled wet disc brakes give long service intervals. Brake wear indicator and brake test in Contronic II are included in the brake system.

Service brakes: Volvo, dual-circuit system with nitrogen-charged accumulators for dead engine braking. Fully hydraulically operated, enclosed internal oil circulation-cooled, outboard mounted disc brakes. Transmission declutch during braking can be preselected with a switch on the instrument panel. Brake performance test in the Contronic II system.

Parking brake: Enclosed wet multi-disc brake built into the transmission. Spring-loaded application. Electro-hydraulic release via a switch on the instrument panel. Automatically applied when the key is turned off.

Secondary brake: Either of the service brake circuits or the parking brake fullfills ISO/SAE safety requirements.

Standards: The brake system complies with the requirements of ISO 3450, SAE J1473

Number of discs/wheel	1
Number of accumulators	3
Volume, each	1,0 l

OPERATIONAL DATA VOLVO L120D

		GENERAL PURPOSE						ROCK**	LIGHT MATERIAL	LONG BOOM	
Tires 23.5 R25 L2		Teeth	Bolt-on edge	Teeth	Bolt-on edge	Bolt-on edge	Bolt-on edge	Teeth Segments	Bolt-on edge	Bolt-on edge	Bolt-on edge
Volume, heaped ISO/SAE	m^3	3,0	3,1	3,3	3,4	3,4	3,6	3,1	5,5	2,6	2,6
Actual volume, 110%	m^3	3,3	3,4	3,6	3,7	3,7	4,0	–	6,1	2,9	2,9
Static tipping load, straight	kg	14 440	14 200	14 280	13 340	14 050	13 250	14 490	12 660	11 180	11 780
at 35° turn	kg	12 790	12 570	12 640	11 760	12 430	11 680	12 790	11 120	9 810	10 380
at full turn	kg	12 310	12 100	12 160	11 300	11 950	11 220	12 290	10 660	9 410	9 960
Breakout force	kN	159,1	150,7	151,1	132,7	143,5	129,0	150,3	104,8	156,7	171,2
A	mm	8 300	8 130	8 370	8 320	8 210	8 370	8 280	8 710	8 610	8 510
E	mm	1 350	1 200	1 420	1 370	1 260	1 410	1 280	1 730	1 220	1 120
H *)	mm	2 810	2 920	2 760	2 790	2 870	2 760	2 870	2 480	3 440	3 520
L	mm	5 630	5 630	5 700	5 750	5 700	5 800	5 750	5 910	6 080	6 020
M *)	mm	1 300	1 160	1 350	1 290	1 210	1 330	1 210	1 540	1 130	1 050
N *)	mm	1 870	1 780	1 890	1 850	1 810	1 860	1 830	1 880	2 220	2 170
V	mm	2 880	2 880	2 880	2 880	2 880	2 880	2 880	3 000	2 880	2 880
a_1 clearance circle	mm	12 770	12 680	12 810	12 770	12 710	12 800	12 760	13 120	13 090	13 020
Operating weight	kg	18 790	18 880	18 870	19 210	18 960	19 260	20 020	19 540	19 380	19 110

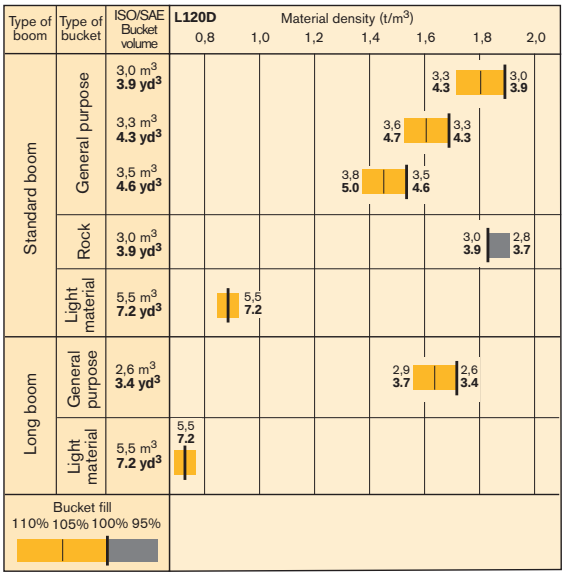
*) at dump angle 45°
**) with L5 tires

BUCKET SELECTION CHART

The choice of bucket is determined by the density of the material and the bucket fill factor. The TP-linkage uses a very open bucket design, has very good roll back in all positions and fills the bucket very well. This means that the actual volume carried is often larger than the rated capacity of the bucket. Bucket fill factors for different materials and how they affect the actual bucket volume are shown in the table. Example: Sand and gravel. Fill factor ~105%. Density 1,65 ton/m^3. Result: The 3,3 m^3 bucket carries 3,5 m^3. For optimum stability always consult the bucket selection chart.

Material	Bucket fill %	Material density ton/m^3	ISO/SAE bucket volume, m^3	Actual volume, m^3
Earth/Clay	~ 110	~ 1,7	3,0	~ 3,3
		~ 1,5	3,3	~ 3,6
		~ 1,4	3,5	~ 3,8
Sand/Gravel	~ 105	~ 1,75	3,0	~ 3,2
		~ 1,65	3,3	~ 3,5
		~ 1,5	3,5	~ 3,7
Aggregate	~ 100	~ 1,9	3,0	~ 3,0
		~ 1,7	3,3	~ 3,3
		~ 1,6	3,5	~ 3,5
Rock	≤ 100	~ 1,8	3,0	~ 3,0

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.



SUPPLEMENTAL OPERATING DATA

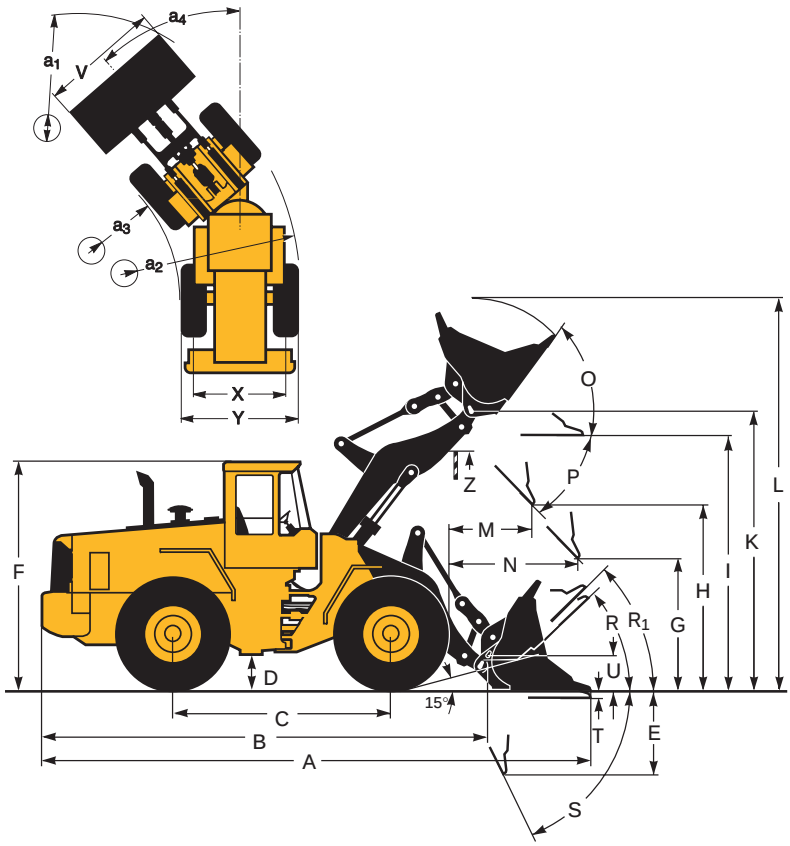
		Standard Boom 23.5R25 L5	Long Boom 23.5R25 L5
Width over tires	mm	+10	+10
Ground clearance	mm	+10	+10
Tipping load, full turn	kg	+570	+460
Operating weight	kg	+820	+820

OPERATIONAL DATA & DIMENSIONS

Tires: 23.5 R25* L2		
	STANDARD BOOM	LONG BOOM
B	6 680 mm	7 170 mm
C	3 200 mm	3 200 mm
D	420 mm	420 mm
F	3 350 mm	3 350 mm
G	2 135 mm	2 135 mm
J	3 790 mm	4 310 mm
K	4 110 mm	4 620 mm
O	55˚	55˚
P	45˚ (P max. 49˚)	45˚(P max. 49˚)
R	42˚	43˚
R_1*	47˚	50˚
S	67˚	64˚
T	90 mm	130 mm
U	510 mm	630 mm
X	2 060 mm	2 060 mm
Y	2 680 mm	2 680 mm
Z	3 350 mm	3 720 mm
a_2	5 730 mm	5 730 mm
a_3	3 060 mm	3 060 mm
a_4	±40˚	±40˚

* Carry position SAE

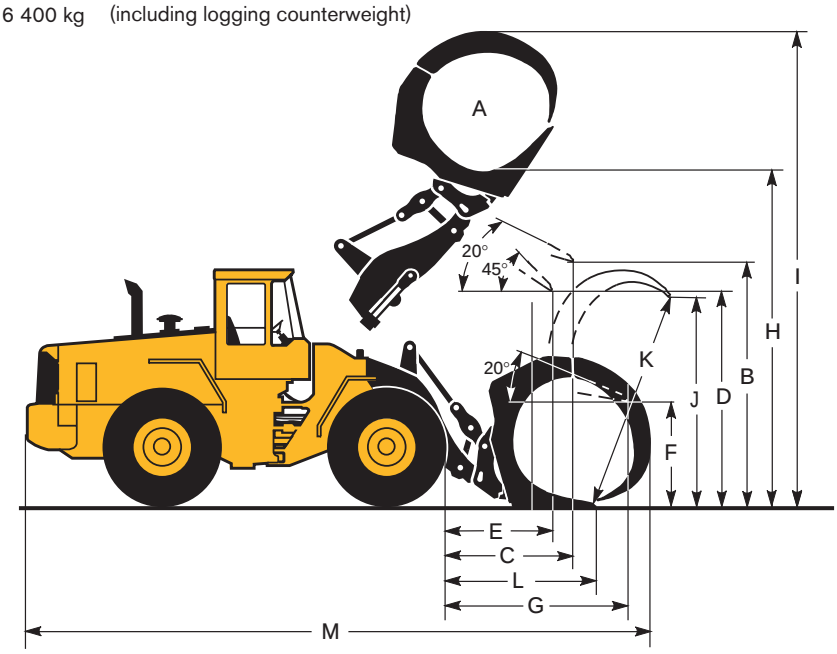
Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818, ISO 8313.



SORTING GRAPPLE *(Hook-on)*

Tires: 23.5 R25* L3	
A	2,4 m^2
B	3 570 mm
C	1 850 mm
D	2 950 mm
E	1 470 mm
F	1 540 mm
G	2 780 mm
H	4 690 mm
I	6 710 mm
J	2 750 mm
K	2 960 mm
L	2 130 mm
M	8 950 mm

Order No: 92746
Operating weight: 19 860 kg (including logging counterweight)
Operating load: 6 400 kg (including logging counterweight)



STEERING SYSTEM

Easily operated steering results in fast work cycles. The power-efficient system results in good fuel economy, good directional stability and a smooth ride.

Steering system: Load-sensing hydrostatic articulated steering with power amplification.

System supply: The steering system is supplied by a separate steering pump.

Pump: Double variable-flow axial piston pump.

Cylinders: Two double-acting cylinders.

Steering cylinders	2
Bore	80 mm
Piston rod diameter	50 mm
Stroke	476 mm
Relief pressure	21 MPa
Max. flow	91 l / min
Articulation	± 40 °

CAB

Care Cab II with wide door opening and easy entry. Inside of cab lined with noise-absorbent materials. Noise and vibration suppressing suspension. Good all-round visibility through large glass areas. Curved front windshield of greentinted glass. Ergonomically positioned controls and instruments permit a comfortable operating position.

Instrumentation: All important information is centrally located in the operator's field of vision. Display for Contronic II monitoring system in center console on dashboard.

Heater and defroster: Heater coil with filtered fresh air and fan with four speeds. Defroster vents for all windows.

Operator's seat: Operator's seat with adjustable suspension and retractable seatbelt. The seat is mounted on a bracket on the rear cab wall. The forces from the retractable seatbelt are absorbed by the seat rails.

Standards: The cab is tested and approved according to ROPS (ISO/CD 3471, SAE J1040), FOPS (ISO 3449, SAE J231). The cab meets with requirements according to ISO 6055 ("protective roof for high-lift vehicles") and SAE J386 ("Operator Restraint System").

Emergency exits	2
Sound level in cab	
According to ISO 6396	LpA 77 dB(A)
External sound level	
According to ISO 6395	LwA 109 dB(A)
External sound level	
Optional EU noise red. kit	LwA 106 dB(A)
According to EU 2002/2006 requirements	
Ventilation	9 m^3/min
Heating capacity	11 kW
Air conditioning (optional equipment)	8 kW

HYDRAULIC SYSTEM

Open center hydraulic system with efficient, high capacity vane pumps allows precision control and quick movements at low rpm.

Pump: Vane pump fitted to a power take-off on the transmission. The pilot system is supplied from a combined pilot/brake pump which is mounted in series with the steering pump.

Valve: Double-acting 3-spool valve. The control valve is actuated by a 3-spool pilot valve.

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

Tilt function: The valve has three functions: rollback, hold and dump. Inductive/magnetic automatic bucket positioner that can be switched on and off.

Cylinders: Double-acting

Filter: Full-flow filtration through 20 µm (absolute) filter cartridge.

Vane pump	
Relief pressure	22,5 MPa
Flow	275 l/min
at	10 MPa
and engine speed	35 r/s (2 100 r/min)
Pilot system	
Relief pressure	3,0 MPa
Cycle times	
Raise*	5,8 s
Dump*	1,7 s
Lower, empty	2,8 s
Total cycle time	10,3 s

* with load as per ISO 5998 and SAE J818

LIFT-ARM SYSTEM

TP Linkage combines high breakout torque throughout the working range with nearly exact parallel lift-arm action. These features, together with high lift height and long reach, make the lift-arm system equally good for bucket loading and work with attachments.

Lift cylinder	2
Bore	160 mm
Piston rod diameter	80 mm
Stroke	676 mm
Tilt cylinder	1
Bore	230 mm
Piston rod diameter	110 mm
Stroke	412 mm

STANDARD EQUIPMENT

Engine
Air cleaner, dry type, dual element, exhaust aspirated pre-cleaner
Water separator
Dual fuel filters
Crankcase ventilation oil trap
Coolant level, sight gauge
Engine intake manifold preheater
Muffler, spark arresting
Fan guard

Electrical system
Alternator, 24 V/60 A
Battery disconnect switch
Fuel gauge
Engine coolant temp. gauge
Transmission oil temp. 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 working lights (2 front and 2 rear)
- Instrument lighting

Contronic II monitoring system
Contronic II ECU
Contronic II display
Engine shutdown to idle function:
- High engine coolant temperature
- Low engine oil pressure
- High transmission oil temperature

Neutral start interlock
Brake performance test
Test function for warning and indicator lights
Warning and indicator lights:
- Charging
- Oil pressure, engine
- Oil pressure, transmission
- Brake pressure
- Parking brake applied
- Axle oil temperature
- Primary steering
- Secondary steering
- High beams
- Turn signals
- Rotating beacon
- Preheating coil
- Differential lock
- Coolant temperature
- Transmission oil temperature
- Low fuel level
- Brake charging

Drivetrain
Transmission: modulated with single lever control, Automatic Power Shift II, and operator controlled declutch
Forward/reverse switch on hydraulic lever console
Differentials:
- front 100 % hydraulic differential lock
- rear, conventional

Tires 23.5 R-25* L2

Brake system
Wet, internal oil circulation cooled, disc brakes, 4-wheel, dual circuit
Brake system, secondary
Parking brake alarm - brake applied and machine in gear (buzzer)

Cab
ROPS (SAE J10400C) (ISO 3471), FOPS (SAE J 231) (ISO 3449).
Acoustical lining
Ashtray
Cigarette lighter
Door lockable (left side access)
Heater/defroster/pressurizer with four speed blower fan
Filtered air
Floor mat
Interior light
Interior rearview mirrors(2)
Exterior rearview mirrors(2)
Openable window, right-hand side
Safety glass, tinted
Adjustable hydraulic lever console
Seat, ergonomically designed, adjustable suspension
Retractable seat belt (SAE J386)
Storage compartment
Sun visor
Beverage holder
Windshield wiper, front & rear
Windshield washer, front & rear
Intermittent wiper, front
Cab access steps and handrails
Speedometer (in Contronic II display)

Hydraulic system
Main valve, 3-Spool, pilot operated
Pilot valve, 3-spool
Vane pump
Bucket lever detent
Bucket leveler, automatic with position indicator, adjustable
Boom lever detent
Boom kickout, automatic, adjustable
Hydraulic control lever lock
Boom lowering system
Hydraulic pressure test ports, Quick connect
Hydraulic fluid level, sight gauge
Hydraulic oil cooler

External equipment
Isolation mounts: cab, engine, transmission
Lifting lugs
Side panels, engine hood
Steering frame lock
Vandalism lock, provison for: batteries, engine oil, transmission oil, hydraulic oil, fuel tank
Fenders, front & rear with anti-skid-tape
Towing hitch with pin

OPTIONAL EQUIPMENT *(May be standard in certain markets)*

Service and maintenance equipment
Tool box
Tool kit
Wheel nut wrench kit
Refill pump for automatic lubrication system
Automatic lubrication system
Automatic lubrication system for attachment bracket

Engine
Coolant filter
Extra fuel filter
Cold starting aid, engine coolant preheater (220V/1500 W)
Pre-cleaner, oil bath type
Pre-cleaner, turbo type
Radiator, corrosion protected

Electrical system
Reverse alarm (SAE J994)
Attachment light
Working lights front, extra
Working lights rear, extra
Rotating beacon, amber with collapsible mount
Alternator, brushless, 50A
Alternator 100A
Head lights assym. left
Light, license plate
Side marker lights
Parking brake alarm, audible buzzer if brake not applied when operator leaves seat

Drivetrain
Speed limiter, 3-speed version
Limited-slip differential, rear
Limited-slip differential, front/rear

Cab
Installation kit for radio
Hand throttle
Sliding window, door
Sliding window, right side
Air suspended operator's seat
Heated operator's seat
Seat belt, 3 inch
Air conditioner 8 kW, 27 300 Btu/h
Air conditioner with corrosion protected condensor
Spinner knob on steering wheel
Sun blinds, front and rear windows
Sun blinds, side windows
AM/FM radio with cassette deck
Lunch box holder
Dual service brake pedals
Armrest (left)
Cab filter for asbestos contaminated environment
Instructor seat
Noise reduction kit, cab
Steering wheel, adjustable tilt, telescopic

Hydraulic system
Hydraulic control, 3rd function
3rd function detent
Hydraulic control, 4th function
Hydraulic single acting lifting function
Boom Suspension System
Biodegradable hydraulic fluid
Pilot hoses, 3rd function and separate attachment locking
Attachment bracket
Separate attachment locking system
Single lever hydraulic control
Single lever hydraulic control plus 3rd function

External equipment
Fenders, full coverage, swingout
Logging counterweight
Fenders, axle mounted

Other equipment
Comfort Drive Control (CDC)
Slow moving vehicle emblem
Secondary steering
50 km/h sign
Fuel fill strainer
Long boom
Noise reduction kit, acc. EU stagell 2006

Tires
23.5–25
23.5 R25*

Protective equipment
Protective grids for front running lights
Radiator guard
Protective grids for rear working lights
Window guards for side and rear windows
Windshield guard
Protective grids for tail lights
Bellyguard, front
Bellyguard, rear
Heavy-duty main valve cover

Attachments
Buckets
Fork equipment
Material handling arms
Log grapples
Snow blades
Brooms
Cutting edge, 3 pc reversible, bolt-on
Bucket teeth, bolt-on
Bucket teeth, weld-on
Wear segments, bolt on
Bale clamp
Drum rotator

VOLVO

Volvo Construction Equipment Group

Ref. No. 21 3 669 2321 English
Printed in Sweden 2000.04 – 5,0 WLO
Volvo, Eskilstuna