VOLVO WHEEL LOADER

L90C

- **Engine output SAE J1349:**
  gross 118 kW, **160 hp**
  net 113 kW, **154 hp**
- **Operating weight:** 14,4–16,1 t
  31,790–35,490 lb
- **Buckets:** 2,2–7,0 m^3
  2.9–9.2 yd^3
- **Volvo high-performance, low-emission engine** with excellent low rpm performance.
  The engine meets all known regulations regarding exhaust emissions for off-road machines until year 2001.
- **Volvo transmission with APS II,** 2nd generation of Automatic Power Shift with mode (shift pattern) selector for optimum performance and fuel consumption.
- **Wet disc brakes**
  – Fully sealed oil circulation-cooled wet disc brakes, outboard-mounted.
- **Torque Parallel Linkage**
  – high breakout torque throughout the working range
  – excellent parallel lift-arm action
- **Care Cab** – pressurized cab with high comfort and safety
- **Contronic** monitoring system
- **Load-sensing steering system**
- **Pilot-operated working hydraulics**

Optional Equipment

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

Other options, see back page

VOLVO

SERVICE

Contronic monitoring system provides information on machine condition, routine maintenance schedules and minimizes time required for troubleshooting.

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

Refil capacities	l	US gal
Fuel tank	210	**55.5**
Engine coolant	53	**14.0**
Hydraulic tank	130	**34.3**
Transmission	33	**8.7**
Engine oil	16	**4.2**
Axle front / rear	36/41	**9.5/10.8**

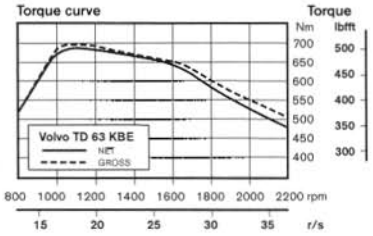
ENGINE

Engine delivers high torque and quick response at low rpm even under full load. The machine can work at low engine speeds, which contributes to good fuel economy, less noise, less wear and longer life.

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

Air cleaning: three-stage.

Engine	Volvo TD 63 KBE		
	35 r/s	**2100**	**rpm**
Flywheel output at	118 kW	**160**	**hp**
	113 kW	**154**	**hp**
SAE J1349 gross	18,3 r/s	**1100**	**rpm**
	695 Nm	**513**	**lbf ft**
SAE J1349 net	690 Nm	**509**	**lbf ft**
	5,48 l	**334**	**in³**



ELECTRICAL SYSTEM

Contronic monitoring system with complete information on the status of the machine's various systems is standard. Electrical system with circuit board is well-protected by fuses. Prewired for optional equipment.

Central warning: Central warning lamp for the following functions: engine oil pressure, engine coolant temperature (with buzzer), transmission oil pressure, transmission oil temperature, brake pressure, parking brake (buzzer), high speed/gear, transmission oil filter and axle oil temperature. Shut down to idle is standard.

Voltage	24	V	
Batteries	2x12	V	
Battery capacity	2x105	Ah	
Cold cranking capacity	690	A	
Reserve capacity	185	min	
Alternator rating	1 680	W / 60 A	
Starter-motor output	5,4	kW	**7.3 hp**

DRIVETRAIN

Drivetrain and working hydraulics well-matched to each other. Dependable design. Quick acceleration boosts productivity. Volvo system-compatible design facilitates servicing.

Torque converter: Single-stage

Transmission: Volvo Automatic 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 131	
Torque multiplication	2,66:1	
Speeds		
max. forward / reverse	km/h	**mph**
1	7,1	**4.4**
2	13,3	**8.3**
3	27,7	**17.2**
4 (forward only)	38,2	**23.7**
Measured with tires	20.5 R25* L2	
Front and rear axle	Volvo / AWB 30	
Oscillation, rear axle	±15°	
Ground clearance at		
15° oscillation	505 mm	**19.9 in**

BRAKE SYSTEM

Simple, reliable system with few parts ensures high availability and safety. Self-adjusting internal oil circulation-cooled disc brakes give long service intervals.

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

Parking brake: Mechanically operated disc brake on transmission output shaft to front axle.

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

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

Number of discs/wheel	1	
Number of accumulators	2	
Volume, each	1,0 l	**61 in³**

STEERING SYSTEM

Low-effort steering gives short work cycle times. Power-efficient system provides good fuel economy, good directional stability and easy steering.

Steering system: Load-sensing hydrostatic articulated steering.

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

Pump: Variable-flow axial piston pump.

Cylinders: Two double-acting cylinders.

Steering cylinders	2			
Bore	70	mm	**2.76**	**in**
Piston rod diameter	40	mm	**1.57**	**in**
Stroke	419	mm	**16.5**	**in**
Relief pressure	21	MPa	**3046**	**psi**
Max. flow	91	l / min	**24.0**	**US gpm**
Articulation	±40°			

CAB

Care Cab with easy entry and wide door opening. Lined with sound-absorbent material. Sound- and vibration-suppressing suspension. Good all-round visibility, large glass areas. Curved windshield of laminated, green-tinted glass. Ergonomically located controls and instruments permit a comfortable operating position.

Instrumentation: All important information is readily visible to the operator. Cab display for Contronic monitoring system, is standard.

Heater and defroster: Heating and ventilation system with filtered fresh air and four-speed fan. Defroster outlets for all windows.

Operator's seat: Heated, spring-suspended, adjustable operator's seat with retractable belt. The seat is mounted on a bracket on the rear wall. The force from the belt is absorbed by the seat rails.

Standards: Tested and approved according to the following standards: ROPS (ISO/CD 3471, SAE J1040), FOPS (ISO 3449, SAE J231). Complies with "Overhead guards for rider lift trucks" (ISO 6055) and "Operator Restraint System" (SAE J386).

Emergency exits	2			
Sound level in cab as per ISO 6394,				
max fan position	72	dB (A)		
fan position 2	69	dB (A)		
Exterior sound level ISO 6393 LwA	106	dB (A)		
Ventilation	10	m^3/min	**353**	**ft^3/min**
Heating capacity	11	kW	**37,500**	**Btu/h**
Air conditioning (optional)	8	kW	**27,300**	**Btu/h**

HYDRAULIC SYSTEM

Open center hydraulics with efficient high-capacity vane pump allows precision control and quick movements even at low engine speed.

Pump: Vane pump fitted to a power takeoff 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. Actuated by a 3-spool pilot valve. 3rd spool for optional 3rd hydraulic function.

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. Adjustable inductive/magnetic automatic bucket positioner that can be switched on and off.

Cylinders: Double-acting

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

Vane pump				
Relief pressure	22,5	MPa	**3263**	**psi**
Flow	202	l/min	**53**	**US gpm**
at	10	MPa	**1450**	**psi**
and engine speed	35	r/s	**2100**	**rpm**
Pilot system				
Relief pressure	3,0	MPa	**435**	**psi**
Cycle times	s			
Raise*	5,5			
Dump*	1,9			
Lower, empty	2,3			
Total cycle time	9,7			

* with load as per ISO 5998 and SAE J818

LIFT-ARM SYSTEM

TP Linkage combines high breakout torque throughout the working range with parallel lift-arm action. These features, together with good visibility, high lift height and long reach, make the lift-arm system equally good in bucket loading and work with fork attachments and material-handling arms.

Lift cylinder	2			
Bore	130	mm	**5.1**	**in**
Piston rod diameter	70	mm	**2.8**	**in**
Stroke	710	mm	**28.0**	**in**
Tilt cylinder	1			
Bore	190	mm	**7.5**	**in**
Piston rod diameter	90	mm	**3.5**	**in**
Stroke	430	mm	**16.9**	**in**

OPERATIONAL DATA, VOLVO L90C

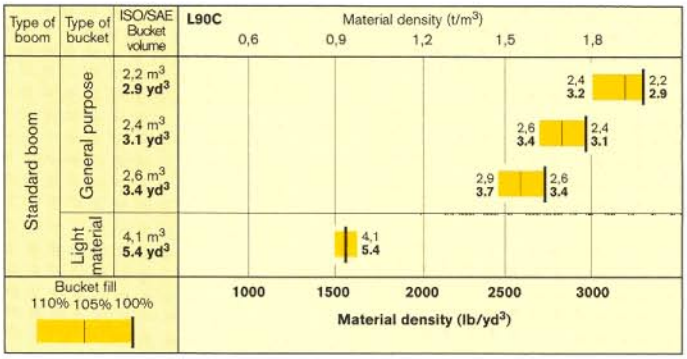
		GENERAL PURPOSE						GRADING	LIGHT MATERIAL		
Tires 20.5 R25*		Bolt-on edge	Bolt-on edge	Bolt-on edge	Teeth & segments	Bolt-on edge	Bolt-on edge	Bolt-on edge	Bolt-on edge	Bolt-on edge	Bolt-on edge
Volume, heaped ISO/SAE	m^3	2,7	2,6	2,6	2,6	2,5	2,3	2,1	4,1	4,1	7,0
	yd^3	**3.5**	**3.4**	**3.4**	**3.4**	**3.3**	**3.0**	**2.75**	**5,4**	**5.4**	**9.2**
Actual volume, 110%	m^3	3,0	2,9	2,9	2,9	2,8	2,5	2,2	4,5	4,5	7,7
	yd^3	**3.9**	**3.8**	**3.8**	**3.7**	**3.6**	**3.3**	**2.9**	**5.9**	**5.9**	**10.0**
Static tipping load, straight	kg	10 290	10 410	9 800	10 370	9 950	9 950	8 850	10 020	9 550	9 270
	lb	**22,690**	**22,950**	**21,600**	**22,850**	**21,940**	**21,940**	**19,510**	**22,090**	**21,060**	**20,440**
at 35° turn	kg	9 090	9 210	8 640	9 180	8 600	8 800	7 850	8 840	8 400	8 100
	lb	**20,040**	**20,310**	**19,050**	**20,240**	**18,960**	**19,390**	**17,310**	**19,490**	**18,520**	**17,860**
at full turn	kg	8 730	8 850	8 300	8 820	8 250	8 440	7 750	8 480	8 050	7 750
	lb	**19,250**	**19,510**	**18,300**	**19,440**	**18,190**	**18,610**	**17,090**	**18,700**	**17,750**	**17,090**
Breakout force	kN	109,8	112,1	102,9	112,2	104,9	109,3	80,7	87,5	82,0	70,4
	lbf	**24,650**	**25,170**	**23,100**	**25,220**	**23,550**	**24,560**	**18,130**	**19,660**	**18,400**	**15,800**
A	mm	7 500	7 470	7 580	7 620	7 550	7 490	7 810	7 830	7 930	8 230
	ft in	**24' 7"**	**24' 6"**	**24' 10"**	**25'**	**24' 9"**	**24' 7"**	**25'7"**	**25'8"**	**26'**	**27'**
E	mm	1 200	1 180	1 280	1 180	1 250	1 200	1 580	1 500	1 590	1 860
	ft in	**3' 11"**	**3' 10"**	**4' 2"**	**3' 11"**	**4' 1"**	**3' 11"**	**5'2"**	**4'11"**	**5' 3"**	**6' 1"**
H*)	mm	2 810	2 830	2 750	2 730	2 770	2 810	2 520	2 600	2 520	2 320
	ft in	**9' 2"**	**9' 3"**	**9'**	**8' 11"**	**9' 1"**	**9' 3"**	**8'3"**	**8'6"**	**8' 3"**	**7' 7"**
L	mm	5 430	5 400	5 460	5 400	5 430	5 380	4 200	5 500	5 560	5 770
	ft in	**17' 10"**	**17' 8"**	**17' 11"**	**17' 8"**	**17' 10"**	**17' 8"**	**13'9"**	**18'0"**	**18' 3"**	**18' 11"**
M*)	mm	1 120	1 100	1 170	1 210	1 150	1 110	1 280	1 380	1 440	1 660
	ft in	**3' 8"**	**3' 7"**	**3' 10"**	**4'**	**3' 9"**	**3' 8"**	**4'2"**	**4'6"**	**4' 9"**	**5' 5"**
N*)	mm	1 690	1 690	1 730	1 730	1 720	1 700	1 660	1 730	1 750	1 730
	ft in	**5' 7"**	**5' 6"**	**5' 8"**	**5' 8"**	**5' 8"**	**5' 7"**	**5'5"**	**5'8"**	**5' 9"**	**5' 8"**
V	mm	2 650	2 650	2 650	2 650	2 650	2 650	2 650	2 750	2 750	3 000
	ft in	**8' 8"**	**8' 8"**	**8' 8"**	**8' 8"**	**8' 8"**	**8' 8"**	**8'8"**	**9'0"**	**9'**	**9' 10"**
a_1 clearance circle	mm	12 030	12 010	12 080	12 140	12 060	12 030	12 430	12 390	12 390	12 810
	ft in	**39' 6"**	**39' 5"**	**39' 8"**	**39' 10"**	**39' 7"**	**39' 6"**	**40'9"**	**40'5"**	**40' 8"**	**42'**
Operating weight	kg	15 020	15 000	15 220	15 000	15 190	15 140	14 850	15 130	15 300	15 710
	lb	**33,120**	**33,070**	**33,560**	**33,070**	**33,490**	**33,380**	**32,740**	**33,360**	**33,730**	**34,640**
*) at dump angle 45°.		Including counterweight 1									

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 rollback 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 3200 lb/yd³. Result: The 2.9 yd³ bucket carries 3.0 yd³. For optimum stability always consult the bucket selection chart.

Material	Bucket fill %	Material density lb/yd³	ISO/SAE bucket volume, yd³	Actual volume, yd³
Earth/Clay	~ 110	3030	2.9	3.2
		2865	3.25	3.6
		2530	3.4	3.7
Sand/Gravel	~ 105	3200	2.9	3.0
		2865	3.25	3.4
		2700	3.4	3.6
Aggregate	~ 100	3200	2.9	2.9
		3030	3.25	3.25
		2700	3.4	3.4
Rock	≤ 100	2865	2.9	2.9

The actual volume handled varies with the bucket fill factor 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 and fill factor.



Supplemental operating data

		Excluding counterweight 1	counterweight 2
Operating weight	kg lb	−300 **−660**	+500 **+1100**
Buckets			
Tipping Load , full turn	kg lb	−500 **−1100**	+800 **+1760**

Counterweight 1 *may be used in rehandling and material handling.*

Counterweight 2, and combinations of counterweight 1 and 2, *may be used in pallet fork and material arm handling for stabilizing purposes on firm and level ground.*

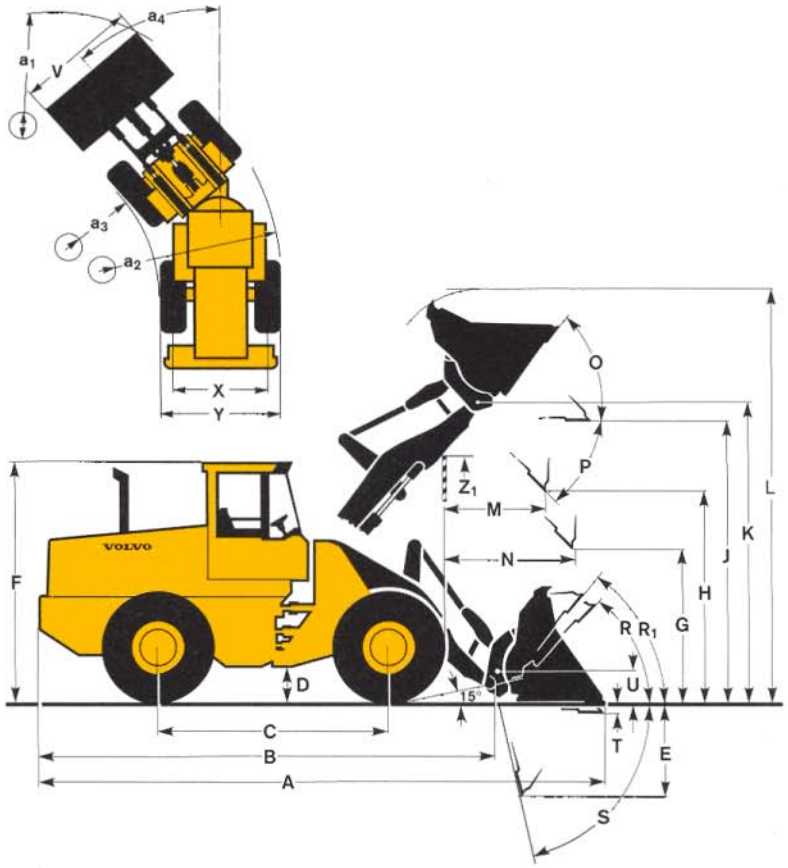
Counterweight 2 *replaces hydroinflation of rear tires and must never be combined with tire chains.*

OPERATIONAL DATA & DIMENSIONS

TIRES: 20.5 R25* L2		
B	6 050 mm	**19'10"**
C	3 000 mm	**9'10"**
D	410 mm	**1'4"**
F	3 270 mm	**10'9"**
G	2 135 mm	**7'0"**
J	3 650 mm	**12'0"**
K	3 960 mm	**13'0"**
O	57°	
P	45° max	
R	44°	
R_1*	48°	
S	67°	
T	110 mm	**4.4"**
U	450 mm	**1'6"**
X	1 960 mm	**6'5"**
Y	2 490 mm	**8'2"**
Z	3 060 mm	**10'0"**
a_2	5 370 mm	**17'7"**
a_3	2 880 mm	**9'5"**
a_4	±40°	

* Carry position SAE

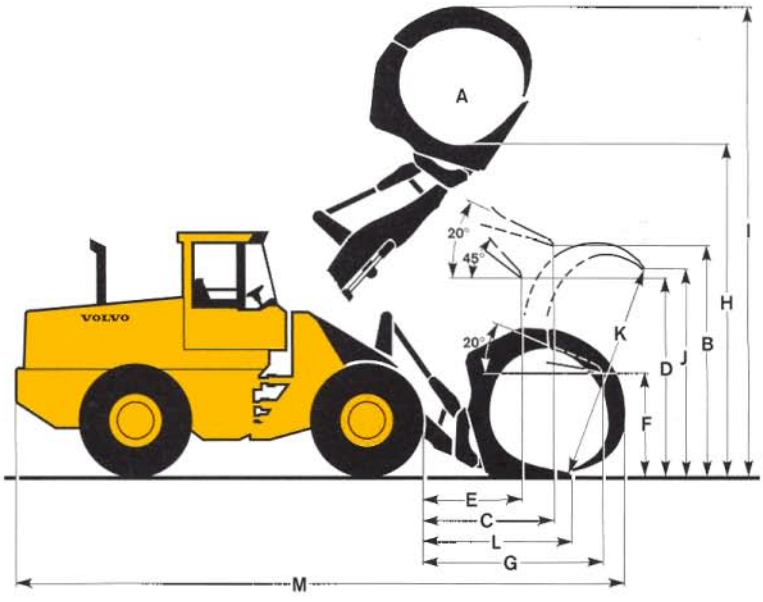
Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818, ISO 8313.



SORTING-GRAPPLE (hook on)

A	1,8 m^2	**19.4 ft^2**
B	3 440 mm	**10'10"**
C	1 670 mm	**6'2"**
D	2 890 mm	**8'11"**
E	1 310 mm	**5'0"**
F	1 470 mm	**4'9"**
G	2 610 mm	**8'9"**
H	4 520 mm	**14'6"**
I	6 260 mm	**20'2"**
J	2 400 mm	**7'10"**
K	2 590 mm	**8'6"**
L	1 990 mm	**6'6"**
M	8 210 mm	**28'11"**

Tires: 20.5 R25* L2
Operating weight: 15 850 kg **34,940 lb** incl. counterweight 1 & 2
Operating load: 4 800 kg **10,580 lb** incl. counterweight 1 & 2



STANDARD EQUIPMENT

Engine
High performance, low-emission
Dual fuel filters
Water trap, fuel
Air cleaner, dry type, dual element, exhaust-aspirated pre-cleaner
Coolant level, sight gauge
Coolant filter
Engine intake manifold preheater
Muffler, spark arresting
Fan guard

Electrical System
24 V – prewired for optional accessories
Alternator, 24 V, 60 A
Battery disconnect switch
Fuel gauge
Engine coolant temperature gauge
Transmission oil temperature gauge
Hour meter
Horn, electric
Reverse alarm (SAE J994)
Instrument panel with symbols
Lights:
- driving (2 front), halogen with high/low beam
- parking lights
- stop/tail combination (2 rear)
- turn signals with hazard warning switch
- working lights, halogen (2 front, 2 rear)
- instrument lighting

Contronic Monitoring System, ECU with:
Contronic display
Brake test
Shut down to idle at
- high engine coolant temp
- low engine oil pressure
- high transm. oil temp

Neutral start feature
Test function for warning & monitoring lights
Warning & monitoring lights:
- engine oil pressure
- engine coolant temperature
- air cleaner restriction
- alternator malfunction
- working lights
- high beam driving lights
- direction indicator, hazard
- diff. lock
- transmission oil pressure
- transmission oil temperature
- axle oil temperature
- brake system pressure
- parking brake applied
- primary steering system

Central warning (with buzzer):
- engine oil pressure
- engine coolant temperature (buzzer)
- transmission oil pressure
- transmission oil temperature
- brake system pressure
- parking brake applied and transmission in forward or reverse (buzzer)
- overspeedeng engine
- transmission oil filter
- axle oil temperature (buzzer)
- overspeeding engine/transmission (buzzer)

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

Tires 20.5R25* L3

Brake System
Wet, internal oil circulation-cooled, outboard-mounted disc brakes, 4-wheel, dual circuit
Brake system, secondary

Cab
ROPS (SAE J10400C) (ISO 3471), FOPS (SAE J 231) (ISO 3449).
Steering wheel, adjustable tilt, telescopic
Acoustical lining
Ashtray
Cigarette lighter
Door lockable (left side access)
Dual service brake pedals
Heater/defroster/pressurizer 11 kW, 37,500 Btu/h with four-speed blower fan
Filtered air
Floor mat
Interior light
Interior rearview mirror
Exterior rearview mirrors (2)
Openable window, right-hand side
Retractable seat belt (SAE J386)
Safety glass, tinted
Seat, heated, ergonomically designed, adjustable suspension
Sliding ventilation window in door
Storage compartment
Sun visor
Windshield wiper, front & rear
Windshield washer, front & rear
Intermittent wiper, front

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 detents
Boom kickout, automatic, adjustable
Hydraulic pressure test ports, quick connect
Hydraulic fluid level, sight gauge
Hydraulic oil cooler
Boom lowering, stopped engine

External Equipment
Isolation mounts: cab, engine, transmission, radiator
Lifting lugs
Side panels, engine hood
Steering frame lock
Vandalism lock, provision for: batteries, engine compartment
Fuel fill strainer
Drawbar hitch
Cab access steps and handrails
Fenders, front & rear with anti-skid-tape
Tie-down points

OPTIONAL EQUIPMENT

Service and maintenance equipment
Toolbox
Automatic lube system

Engine
Coolant pre-heater (120 V/1500 W)
Pre-cleaner, oil bath type
Pre-cleaner, turbo type
Radiator, corrosion protected

Electrical System
Attachment lights
Working lights front, extra
Working lights rear, extra
Rotating beacon, amber with collapsible mount
Alternator, brushless
Alternator, 100A

Drivetrain
Limited-slip differential, rear

Cab
Electrically controlled parking brake
Installation kit for radio
Hand throttle
Speedometer
Air-suspended operator's seat
Operator seat without heat
Seat belt, 3 in.
Sliding window, right side
Air-conditioner 8 kW, 27,300 Btu/h
Armrest, left side
Parking brake alarm

Hydraulic System
Arctic kit
Hydraulic control, 3rd function
Hydraulic control, 4th function
Hydraulic single-acting lifting function
Biodegradable hydraulic fluid
Boom suspension system
Attachment bracket with separate locking system
Lever detent 3rd function

External Equipment
Counterweight 1, 300 kg/660 lb
Counterweight 2, 500 kg/1102 lb
Fenders, full coverage, axle-mounted rear

Other Equipment
Comfort Drive Control (CDC)
Slow-moving vehicle emblem
Secondary steering

Tires
20.5–25 L2, L3, L4
20.5 R25*

Protective Equipment
Guards for:
- headlights
- radiator grill
- rear working lights
- rear lights
- side and rear window
- windshield

Bellyguard front/rear
Cover plate under cab
Heavy-duty main valve guard

Attachments
Buckets
Fork equipment
Material-handling arm
Log grapples
Snowplows
Broom
Cutting edge, 3 pc. reversible, bolt-on
Bucket teeth, bolt-on
Attachment, rib kits

Under our policy of continuous product 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

Volvo Construction Equipment Group

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