

VOLVO WHEEL LOADER

L90D



- **Engine output SAE J1995:**
gross 118 kW (160 hp)
ISO 9249, SAE J1349:
net 113 kW (153 hp)
 - **Operating weight:** 14,9–16,7 t
 - **Buckets:** 2,2–7,0 m³
 - **Volvo high performance-low emission engine**
 - with excellent low rpm performance
 - meets all known exhaust emission regulations for off-road vehicles
 - **Volvo transmission with APS II**
 - 2nd generation Automatic Power Shift with mode selector
 - optimises 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
 - Boom Suspension System
 - Comfort Drive Control

VOLVO



SERVICE REFILL CAPACITIES

Contronic II 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 grille and radiator.

Fuel tank	210 l	Transmission	33 l
Engine coolant	53 l	Engine oil	16 l
Hydraulic tank	130 l	Axle front / rear	36/41 l



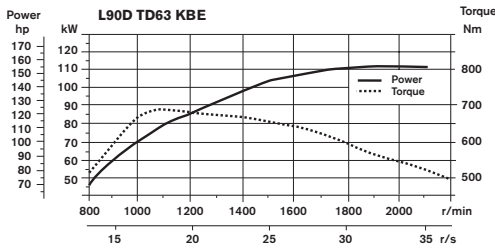
ENGINE

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: 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
Flywheel output at	35 r/s (2 100 r/min)
SAE J1995 gross	118 kW (160 hp)
ISO 9249, SAE J1349 net ..	113 kW (153 hp)
Max. torque at	18,3 r/s (1 100 r/min)
SAE J1995 gross	695 Nm
ISO 9249, SAE J1349 net ..	690 Nm
Displacement	5,48 l



ELECTRICAL SYSTEM

Contronic II monitoring system with increased funktion 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, computer malfunction.

Voltage	24 V
Batteries	2x12 V
Battery capacity	2x105 Ah
Cold cranking capacity, ea.....	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 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	
1	7,1 km/h
2	13,3 km/h
3	27,7 km/h
4	38,2 km/h
Measured with tires	20.5 R25* L2
Front axle	Volvo / AWB 30
Oscillation, rear axle	± 15°
Ground clearance at 15° oscillation	510 mm



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 for dead engine braking. Fully hydraulically operated enclosed internal oil circulation-cooled, out-board mounted disc brakes. Transmission declutch during braking can be preselected by a switch on the instrument panel. Brake performance test in the Contronic II system.

Parking brake: Mechanically operated disc brake on front axle input shaft.

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

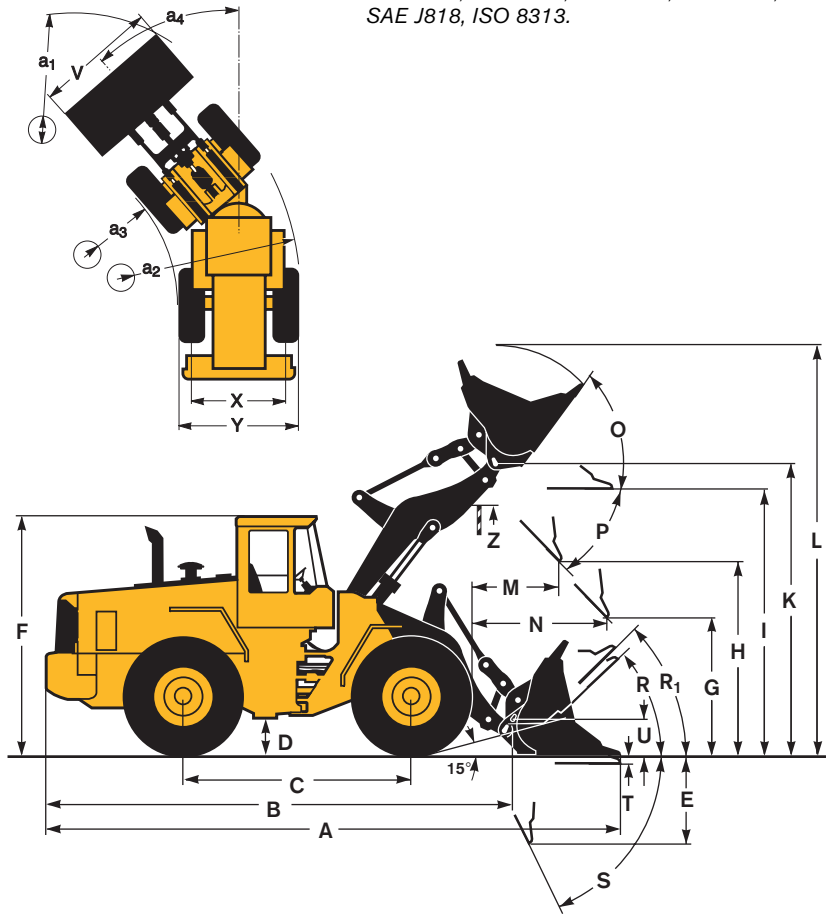
Number of discs/wheel	1
Number of accumulators	2
Volume, each	1,0 l

OPERATIONAL DATA & DIMENSIONS

Tires: 20.5 R25* L2	
B	6 240 mm
C	3 000 mm
D	360 mm
F	3 240 mm
G	2 135 mm
J	3 680 mm
K	3 970 mm
O	57°
P	45° (P max 49°)
R	44°
R ₁ *	48°
S	67°
T	80 mm
U	430 mm
X	1 960 mm
Y	2 490 mm
Z	3 250 mm
a ₂	5 370 mm
a ₃	2 880 mm
a ₄	± 40°

* Carry position SAE

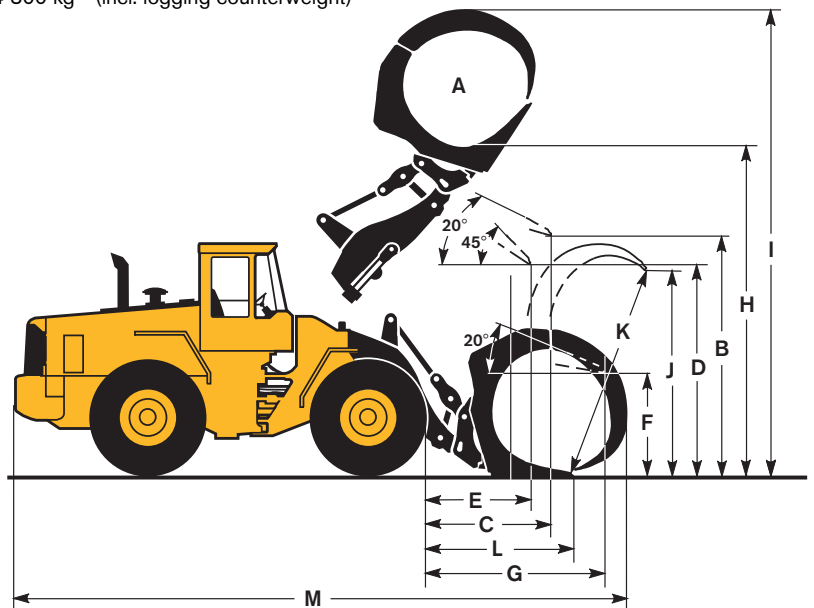
Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732, ISO 7546, SAE J742, ISO 5998, SAE J818, ISO 8313.



GRAPPLE (Hook on)

Tires: 20.5 R25* L2	
A	1,8 m ²
B	3 460 mm
C	1 650 mm
D	2 900 mm
E	1 300 mm
F	1 470 mm
G	2 610 mm
H	4 520 mm
I	6 310 mm
J	2 400 mm
K	2 590 mm
L	2 000 mm
M	8 270 mm

Order No: 92 743
 Operating weight: 16030 kg (incl. logging counterweight)
 Operating load: 4 800 kg (incl. logging counterweight)





STEERING SYSTEM

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

Steering system: Load-sensing hydrostatic articulated steering.

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

Pump: Variable-flow axial piston pump.

Cylinders: Two double-acting cylinders.

Steering cylinders	2
Bore	70 mm
Piston rod diameter	40 mm
Stroke	419 mm
Relief pressure	21 MPa
Max. flow	91 l / min
Articulation	±40°



CAB

Care Cab II with wide door opening and comfortable instep. 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 green-tinted glass. Ergonomically positioned controls and instruments permit a comfortable operating position.

Instrumentation: All important information is centrally located in the operators 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 window areas.

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.

Standard: 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 ISO 6396	75 dB (A)
External sound level	
According to ISO 6395	LwA 105 dB (A)
Ventilation	9 m ³ /min
Heating capacity	11 kW
Air conditioning (optional equipment)	8 kW



HYDRAULIC SYSTEM

Open centre hydraulics with highly efficient vane pumps allows precision control even at low rpm's together with quick movements thanks to the high capacity pumps.

Pump: Vane pump fitted to a power take-off on the transmission. The pilot system is supplied from a combined pilot/brake 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	202 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*	5,5 s
Dump*	1,9 s
Lower, empty	2,3 s
Total cycle time	9,7 s

* with load as per ISO 5998 and SAE J818













LIFTARM 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 as good in bucket loading as in work with fork attachments and material handling arms.

Lift cylinder	2
Bore	130 mm
Piston rod diameter	70 mm
Stroke	710 mm
Tilt cylinder	1
Bore	190 mm
Piston rod diameter	90 mm
Stroke	430 mm






OPERATIONAL DATA, VOLVO L90D

		GENERAL PURPOSE							LIGHT MATERIAL		
Tires 20.5 R25* L2											
		Teeth	Bolt-on edge	Teeth	Teeth	Bolt-on edge	Bolt-on edge	Bolt-on edge	Bolt-on edge	Bolt-on edge	Bolt-on edge
Volume, heaped ISO/SAE	m ³	2,2	2,5	2,5	2,5	2,6	2,6	2,7	2,7	4,1	7,0
Actual volume, 110%	m ³	2,4	2,8	2,8	2,8	2,9	2,9	3,0	3,0	4,5	7,7
Static tipping load, straight	kg	10 510	10 140	10 370	11 020	10 170	10 870	10 120	10 770	9 890	9 610
at 35° turn	kg	9 340	8 990	9 210	9 820	9 010	9 680	8 970	9 580	8 750	8 460
at full turn	kg	8 990	8 650	8 870	9 470	8 670	9 330	8 630	9 230	8 420	8 120
Breakout force	kN	114,0	103,8	107,0	111,3	101,8	111,0	99,9	108,8	81,1	69,7
A	mm	7 770	7 710	7 860	7 850	7 740	7 630	7 760	7 660	8 090	8 400
E	mm	1 310	1 240	1 380	1 360	1 270	1 170	1 290	1 190	1 580	1 860
H *)	mm	2 760	2 790	2 700	2 710	2 770	2 850	2 750	2 830	2 550	2 340
L	mm	5 390	5 440	5 470	5 410	5 460	5 410	5 490	5 440	5 560	5 760
M *)	mm	1 230	1 150	1 290	1 250	1 170	1 090	1 190	1 110	1 450	1 670
N *)	mm	1 760	1 700	1 780	1 730	1 710	1 670	1 720	1 680	1 720	1 720
V	mm	2 650	2 650	2 650	2 650	2 650	2 650	2 650	2 650	2 750	3 000
a ₁ clearance circle	mm	11 930	11 890	11 980	11 960	11 900	11 850	11 920	11 860	12 190	12 600
Operating weight	kg	15 270	15 400	15 340	15 050	15 430	15 140	15 460	15 170	15 500	15 910

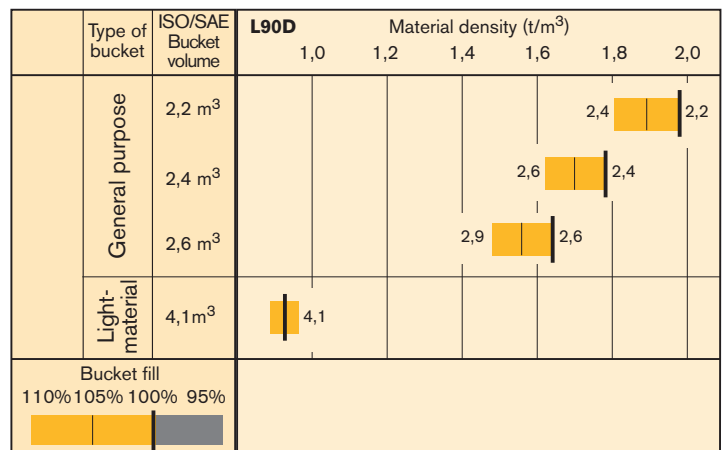
*) at dump angle 45°

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 plus 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 of different materials and how they effect the actual bucket volume are shown in the table. **Example: Sand and gravel. Fill factor ~105%. Density 1,7 ton/m³. Result: The 2,4 m³ bucket carries 2,5 m³.** 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		~ 1,8	2,2	~ 2,4
			~ 1,7	2,4	~ 2,6
			~ 1,5	2,6	~ 2,9
Sand/Gravel	~ 105		~ 1,9	2,2	~ 2,3
			~ 1,7	2,4	~ 2,5
			~ 1,6	2,6	~ 2,7
Aggregate	~ 100		~ 1,9	2,2	~ 2,2
			~ 1,8	2,4	~ 2,4
			~ 1,6	2,6	~ 2,6
Rock	≤ 100		~ 1,7	2,2	~ 2,2

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



STANDARD EQUIPMENT

<p>Engine Air cleaner, dry type, dual element, exhaust aspirated pre-cleaner Water separator Crankcase ventilation oil trap Coolant level, sight gauge Engine intake manifold preheater Muffler, spark arresting Fan guard</p>	<p>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 • 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</p>	<p>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)</p>	<p>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</p>
<p>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</p>	<p>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 20.5 R25* L2</p>	<p>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 Retractable seat belt (SAE J386) Seat, heated, ergonomically designed, adjustable suspension 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) Adjustable hydraulic lever console</p>	<p>External equipment Isolation mounts: cab, engine, transmission Lifting lugs Side panels, engine hood Steering frame lock Vandalism lock, provision for: batteries, engine oil, transmission oil, hydraulic oil, fuel tank Fenders, front & rear with anti-skid-tape Towing hitch, with pin</p>
<p>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</p>			

OPTIONAL EQUIPMENT *(Standard in certain markets)*

<p>Service and maintenance equipment Tool box Tool kit Wheel nut wrench kit Automatic lubrication system Automatic lubrication system, for attachment bracket Refill pump for automatic lubrication system</p>	<p>Side marker lights Parking brake alarm, audible buzzer if brake not applied when operator leaves seat</p>	<p>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 Singel lever hydraulic control Singel lever hydraulic control plus 3rd function</p>	<p>Tires 20.5–25 20.5 R25* 650/65 R 25</p>
<p>Engine Coolant filter Extra fuel filter, with water separator Cold starting aid, engine coolant preheater (220V/1500 W) (120V/1500 W) Pre-cleaner, oil bath type Pre-cleaner, turbo type Radiator, corrosion protected Strainer, fuel fill</p>	<p>Drivetrain Speed limiter, 3-speed version Limited-slip differential, rear Limited-slip differential, front/rear</p>	<p>External equipment Fenders, extended Fenders, axle mounted Counterweight logging</p>	<p>Protective Equipment Protective grids for front running light Protection guard radiator grille Protective grids for rear working lights Window guards for side and rear window Windshield guard Protective grids for tail lights Bellyguard front and rear Heavy duty main valve cover</p>
<p>Electrical system Reverse alarm (SAE J994) Attachment light Working lights front, extra Working lights rear, extra Rotating beacon, amber with collapsible mount Alternator, brushless, 50 A Alternator, 100 A Head lights assym. left Light, registration plate</p>	<p>Cab Installation kit for radio Hand throttle Sliding window, door Sliding window, right side Air suspended operator's seat Seat belt, 3 inch Air conditioner 8 kW, 27 300 Btu/h Air conditioner with corrosion protected condenser Spinner knob on steering wheel Dual service brake pedals Armrest (left) Contronic display Cab filter for asbestos contaminated environment Instructor seat Noise reduction kit, cab Steering wheel, adjustable tilt, telescopic Sun blinds, front and rear window Sun blinds, side windows AM/FM radio with cassette desk Lunch box holder</p>	<p>Other equipment Comfort Drive Control (CDC) Slow moving vehicle emblem Secondary steering 50 km/h sign Fuel fill strainer Electro-hydraulic operated park brake Noise reduction kit, EU 2002/2006 Noise reduction kit, cab</p>	<p>Attachments Buckets Fork equipment Material handling arms Timber grapples Snow blades Brooms Cutting edge, 3 pc reversible, bolt-on Bucket teeth, bolt-on, weld on Wear segments, bolt-on Bale clamp Drum rotator</p>

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

Ref. No. 21 4 669 2320 English
Printed in Sweden 2001.08 – 3,0 WLO
Volvo, Eskilstuna