



Volvo BM L90



- **Engine output:**
SAE J1349 Net 107 kW (145 hp)
- **Operating weight:**
12,6 t (27 785 lb)
- **Buckets:**
2,1-6,5 m³ (2,7-8,5 yd³)

- *Direct-injected, turbocharged Volvo diesel*
- *Volvo BM Automatic Power Shift*
- *Precision steering and small turning radius*
- *Unmatched operator comfort*

Total control of attachment and load

- *Loader unit with parallel lift-arm action, high lift height and long reach*
- *Pilot operated hydraulic system*
- *Ample breakout and lifting forces*
- *Hydraulic attachment bracket*
- *The largest family of attachments on the market*
- *Comfort Drive Control*

VOLVO BM

ENGINE



The engine is a 6-cylinder, direct-injection, 4-stroke, turbocharged diesel engine with wet, replaceable cylinder liners.

Air cleaning: air cleaning in three stages.

1. Cyclone cleaner with automatic exhaust ejector.
2. Paper filter with indicator in cab.
3. Safety filter.

Make		Volvo	
Model		TD 61 G	
Output, gross, at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	115	(156)
Flywheel output at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	107	(145)
DIN 70020 / 6271	kW (hp)	107	(145)
Max. torque at	r/s (r/min)	23,3	(1400)
SAE J1349 Gross	Nm (lbf ft)	570	(420)
SAE J1349 Net	Nm (lbf ft)	550	(405)
DIN 70020 / 6271	Nm (lbf ft)	550	(405)
No. of cylinders		6	
Displacement, total	l (in ³)	5,48	(334)
Bore	mm (in)	98,43	(3,875)
Stroke	mm (in)	120	(4,724)
Compression ratio		16 : 1	

ELECTRICAL SYSTEM



The electrical system is well protected with fuses. Prewired for extra equipment.

Central warning: (standard on certain markets).

Central warning lamp for following functions: engine oil pressure, brake pressure, parking brake, engine temperature, transmission temperature.

Voltage	V	24	
Batteries	V	2x12	
Battery capacity ea.	Ah	2x105	
Cranking capacity ea.	A	2x575	
Reserve capacity ea.	min	2x170	
Alternator rating	W/A	1680/60	
Starter motor output	kW (hp)	5,4	(7,3)

SERVICE REFILL CAPACITIES



Crankcase	l (US gal)	17	(4,5)
Fuel tank	l (US gal)	185	(49)
Cooling system	l (US gal)	53	(14)
Transmission, total	l (US gal)	33	(8,7)
Drop-box	l (US gal)	4,7	(1,2)
Front axle, total	l (US gal)	32,5	(8,6)
Rear axle, total	l (US gal)	29,5	(7,8)
Hydraulic system	l (US gal)	140	(37,0)
Hydraulic tank	l (US gal)	105	(27,7)

DRIVE TRAIN



Torque converter: single-stage, singlephase.

Transmission: Volvo BM power shift transmission of countershaft type with directional clutch modulation. Single lever control.

Axes: fully floating half-shafts. One-piece axle housing of ductile iron. Rigid front axle and oscillating rear axle.

Differential: 100% differential lock on front axle. Engagement and disengagement by means of switch on cab floor. Gearing is conventional, hypoid gears.

Hub reduction: Volvo BM manufacture with planetary type hub reduction gears. Low-friction roller bearings on each planetary wheel. The hub reduction gears can be removed without having to remove wheels and brakes.

Tires: alternative tires are available for different working operations.

Torque multiplication		2,66 : 1	
Transmission, make		Volvo BM	
Model		HT 131	
Running speeds			
1, forward/reverse	km/h (mile/h)	7,0	(4,4)
2, forward/reverse	km/h (mile/h)	14,0	(8,7)
3, forward/reverse	km/h (mile/h)	29,0	(18,0)
4, forward/reverse	km/h (mile/h)	40,0	(24,9)
Measurement with tires		20.5 R 25*	
Front axle, make		Volvo BM	
Model		AH 55 C	
Rear axle, make		Volvo BM	
Model		AH 45 D	
Oscillation	± °	15	
	mm (in)	525	(20,70)

BRAKE SYSTEM



The brake system meets requirements according to SAE J1473, EG 71/320 and ISO 3450.

Service brakes: fully hydraulically operated power disc brakes. Transmission disengagement when braking pre-selected with a switch on the instrument panel.

Secondary: dual-circuit system, divided between axles. One circuit, or parking brake fulfills the requirements.

Parking brake: disc brake on front axle pinion drive flange. A warning lamp indicates when the parking brake is applied and gear lever is in forward or reverse.

Brake friction area				
front/wheel ea.	cm ² (in ²)	405	(62,8)	
rear/wheel ea.	cm ² (in ²)	405	(62,8)	
Accumulators		3		
volume, total	l (in ³)	1,5	(91,5)	
Parking brake area, total	cm ² (in ²)	100	(15,5)	

STEERING SYSTEM



Load-sensing hydrostatic articulated steering.

Pump: variable flow axial piston pump fitted to a power take-off on transmission.

System supply: steering system supplied from separate steering pump.

Cylinders: two double-acting cylinders.

Steering cylinders			2	
Bore	mm	(in)	80	(3,15)
Piston rod diameter	mm	(in)	50	(1,96)
Stroke	mm	(in)	410	(16,1)
Relief pressure	MPa	(psi)	16,5	(2393)
Flow	l/min		97	
	(US gal/min)			(25,6)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)

CAB



Tested and approved as safety cab according to the Swedish Working Environment Act section 3, sub-section 8, and meets

standards according to ISO 3471-1980, ROPS (SAE J1040c), ISO 3449-1980 FOPS (SAE J231), SS/ISO 6055 "Over-head guards for fork lift trucks" and SAE J386 Operator Restraint System.

The cab is mounted on four rubber pads and is well insulated.

The windshield is of laminated safety glass, all other windows being of tempered safety glass.

Heater and defroster: heating element with filtered fresh air and 3-speed fan with defroster outlets for all windows.

Operator's seat: spring suspended, fully adjustable operator's seat and seat belt.

Emergency exits			3	
Ventilation	m ³ /min (cfm)		9,5	(335)
Heating capacity	kW	(Btu/h)	11,6	(39600)
Operator's seat			ISRI 6000/575	
Noise in cab max	dB (A)		78	

HYDRAULIC SYSTEM



Open center system pilot operated, and filtered breather on reservoir.

Pump: vane pump fitted to a power take-off on transmission.

System supply: system supplied from a separate pump. Pilot system supplied from a separate pilot pump.

Valve: double-acting 3 spool valve. The control valve is governed by a 3 spool pilot valve.

Lifting function: the valve has four positions: lifting, neutral, lowering and floating. Disengageable electromagnetic boom kick-out. Adjustable for all positions between maximum reach and full lifting height.

Tilting function: the valve has three positions: rollback, neutral and forward tilting. Disengageable electromagnetic tilt positioner adjustable for all desired loading angles.

Cylinders: double-acting.

Filter: full-flow filtering through 10 um filter cartridge in combination with magnetic core.

Load unit: hydraulic cylinders fitted in line with lifting arms.

Main pump				
Relief pressure	MPa	(psi)	20,5	(2975)
Flow	l/min		202	
	(US gal/min)			(53,4)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Pilot pump				
Relief pressure	MPa	(psi)	3,5	(510)
Flow	l/min		20	
	(US gal/min)			(5,3)
at	MPa	(psi)	3,5	(510)
and engine speed	r/s	(r/min)	36,7	(2200)
Lifting cylinder				
Bore	mm	(in)	120	(4,72)
Piston rod diameter	mm	(in)	60	(2,36)
Stroke	mm	(in)	980	(38,58)
Tilting cylinder				
Bore	mm	(in)	110	(4,33)
Piston rod diameter	mm	(in)	60	(2,36)
Stroke	mm	(in)	830	(32,68)
Lifting time *	s		6,6	
Tipping time *	s		1,5	
Lowering time (empty)	s		2,8	
Total cycle time	s		10,9	

* with load, SAE

ATTACHMENTS *(for further information please contact your local dealer)*

Buckets

Straight bucket without teeth	2,1/2,3/2,5 m ³	(2,7/3,0/3,3 yd ³)
Straight bucket with teeth	2,1/2,3 m ³	(2,7/3,0 yd ³)
Spade nose bucket without teeth	2,1 m ³	(2,7 yd ³)
Spade nose bucket with teeth	2,1 m ³	(2,7 yd ³)
Light materials bucket	4 m ³	(5,2 yd ³)
High-dump light materials bucket	3,4/6,5 m ³	(4,5/8,5 yd ³)
Multipurpose bucket	1,7 m ³	(2,2 yd ³)

Timber grapples

Unloading grapple	1,7/2,2 m ²	(18,3/23,7 ft ²)
Sorting grapple	1,7/2,2 m ²	(18,3/23,7 ft ²)
Tree length grapple	1,3 m ²	(13,9 ft ²)
Tropical timber grapple	0,9 m ²	(9,7 ft ²)
Hi-lift swivel wood clamp (SWC)	0,7-2,0 m ²	(7,5-21,5 ft ²)
Log pusher		
Heel kickout		

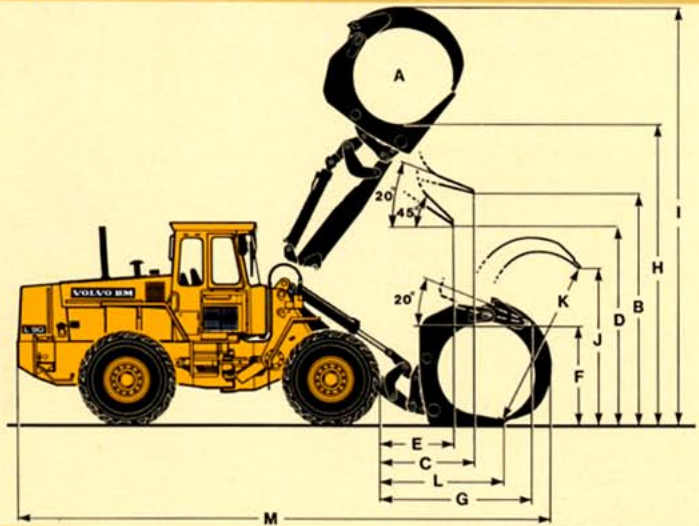
Examples of other attachments

Pallet forks	Material handling arms
Breakout forks	Hydraulic clamping grapple
Fork tine extension	Asphalt cutter
Pallet fork with fork positioner	Diagonal snow blade
Combination forks	Broom

Sorting Grapple (90351 Hook-On)

Operating weight kg (lb) 13290 (29300)
 Operating load kg (lb) 4300 (9480)

A	m ² (ft ²)	1,7 (18,3)
B	mm (ft in)	3315 (10'11")
C	mm (ft in)	1740 (5'9")
D	mm (ft in)	2785 (9'2")
E	mm (ft in)	1420 (4'8")
F	mm (ft in)	1465 (4'10")
G	mm (ft in)	2520 (8'3")
H	mm (ft in)	4295 (14'1")
I	mm (ft in)	6055 (19'10")
J	mm (ft in)	2395 (7'10")
K	mm (ft in)	2590 (8'6")
L	mm (ft in)	1920 (6'4")
M	mm (ft in)	8155 (26'9")

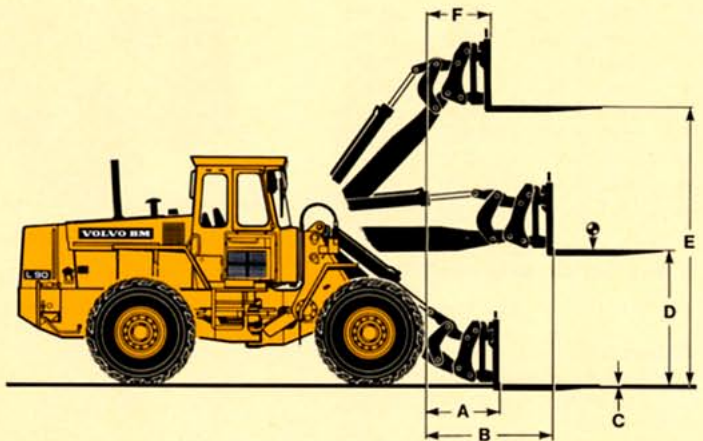


Pallet Fork (Hook-On)

Fork tine, order no. **98390**
 Length mm (ft in) 1225 (4')
 Fork frame, order no. **98386**
 Width mm (ft in) 1500 (4'11")
 Max permissible load
 according to SS 3462 kg (lb) 5000 (11020)
 at load center distance mm (ft in) 600 (2')
 Operating weight kg (lb) 12340 (27200)

A	mm (ft in)	810 (2'8")
B	mm (ft in)	1600 (5'3")
C	mm (ft in)	-10 (-0,4")*
D	mm (ft in)	1880 (6'2")
E	mm (ft in)	3675 (12'1")
F	mm (ft in)	820 (2'8")

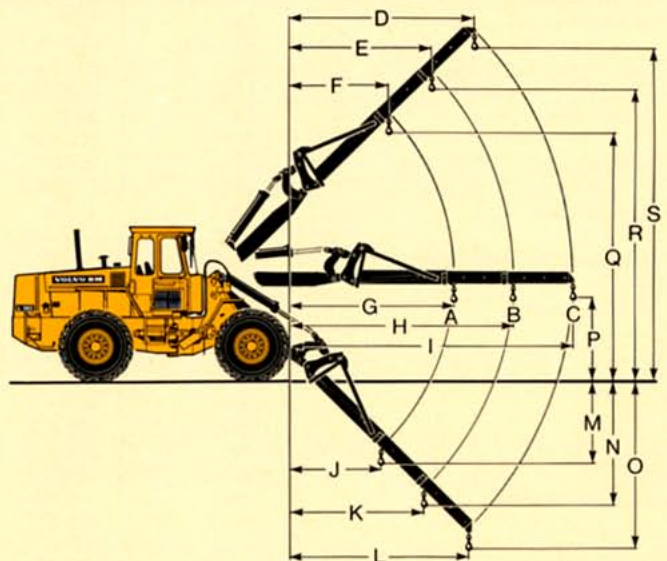
* Above ground surface



Material Handling Arm (98761 Hook-On)

Operating weight kg (lb) 12225 (26950)

A	kg (lb)	2200 (4850)
B	kg (lb)	1750 (3860)
C	kg (lb)	1450 (3200)
D	mm (ft in)	2720 (8'11")
E	mm (ft in)	2115 (6'11")
F	mm (ft in)	1560 (5'1")
G	mm (ft in)	3290 (10'10")
H	mm (ft in)	4325 (14'2")
I	mm (ft in)	5460 (17'11")
J	mm (ft in)	1610 (5'3")
K	mm (ft in)	2230 (7'4")
L	mm (ft in)	2915 (9'7")
M	mm (ft in)	1940 (6'4")
N	mm (ft in)	2770 (9'1")
O	mm (ft in)	3670 (12'1")
P	mm (ft in)	1570 (5'2")
Q	mm (ft in)	5265 (17'3")
R	mm (ft in)	6135 (20'2")
S	mm (ft in)	7090 (23'3")



ALTERATION OF DIMENSIONAL DATA

Tires		20.5 R 25*	20.5-25/12			
Liquid ballast in rear tires		75 % CaCl ₂	-			
Width over wheels	mm (in)	-	± 0			
Ground clearance	mm (in)	-	15 (0,6)			
Tipping load						
at full turn	kg (lb)	930 (2050)	-100 (-220)			
Operating weight	kg (lb)	825 (1820)	-220 (-485)			

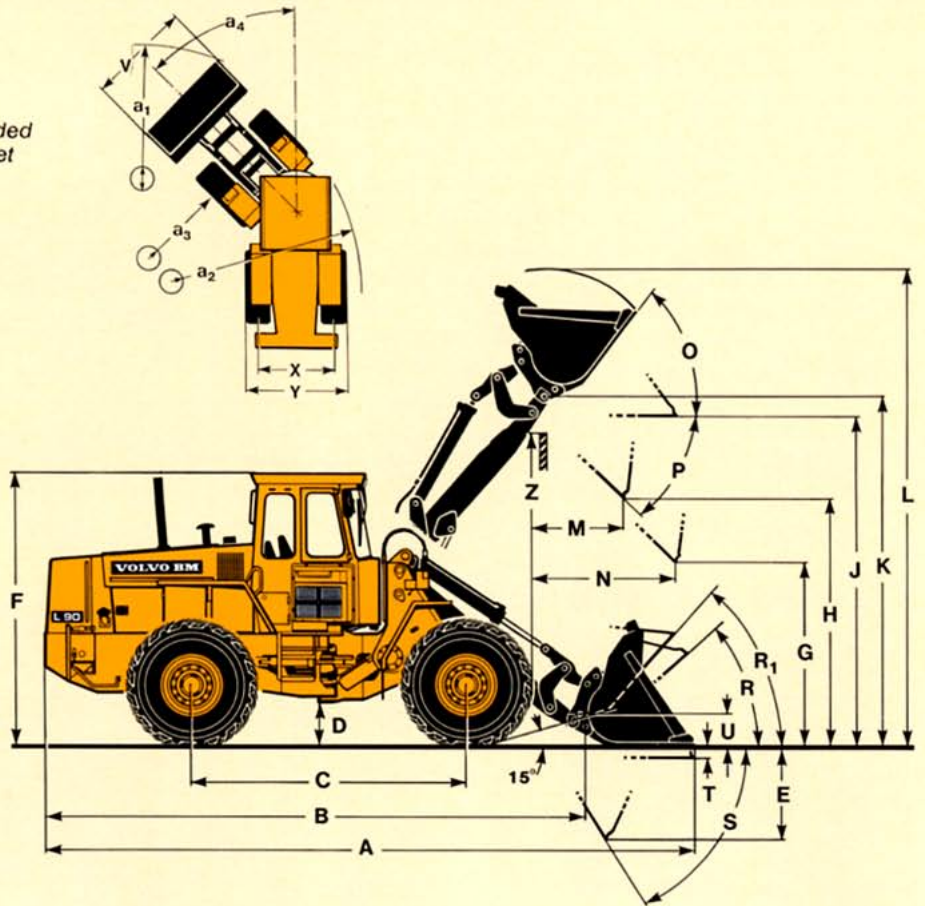
DIMENSIONAL DATA VOLVO BM L90

Tires: 20.5 R 25*

Where applicable, specifications and dimensions are in accordance with SAE Standard J732c, J742b and J818b.
Liquid ballast in rear tires only recommended for stabilizing purposes in timber and pallet handling on hard and level ground.

B	mm (ft in)	5915	(19'5")
C	mm (ft in)	3000	(9'10")
D	mm (ft in)	400	(1'4")
F	mm (ft in)	3030	(9'11")
G	mm (ft in)	2000	(6'7")
J	mm (ft in)	3590	(11'9")
K	mm (ft in)	3810	(12'6")
O	°	53	
P	°	45	
R	°	43	
R ₁ *	°	48	
~	°	54	
S	°	58	
T	mm (ft in)	100	(3,9")
U	mm (ft in)	370	(1'2")
~	mm (ft in)	600	(2')
X	mm (ft in)	1960	(6'5")
Y	mm (ft in)	2490	(8'2")
Z	mm (ft in)	3580	(11'9")
a ₂	mm (ft in)	5370	(17'7")
a ₃	mm (ft in)	2880	(9'6")
a ₄	± °	40	

* Carrying position SAE
~ In practical carry position



Bucket type

- 1 = Straight without teeth
- R = Hook-On
- D = Pin-On

Order No.		91367	91360	91368	91361	91369	91362
Mounting / Bucket type		D / 1	R / 1	D / 1	R / 1	D / 1	R / 1
Volume, heaped	m ³ (yd ³)	2,1 (2,75)	2,1 (2,75)	2,3 (3,0)	2,3 (3,0)	2,5 (3,25)	2,5 (3,25)
Volumetric weight	kg/m ³ (lb/yd ³)	1800 (3000)	1800 (3000)	1600 (2700)	1600 (2700)	1500 (2500)	1500 (2500)
Static tipping load, straight	kg (lb)	9290 (20460)	8930 (19690)	9330 (20530)	8960 (19710)	9190 (20260)	8840 (19480)
at 35° turn	kg (lb)	8300 (18300)	7960 (17550)	8330 (18370)	7990 (17620)	8190 (18060)	7860 (17340)
at full turn	kg (lb)	8000 (17600)	7670 (16910)	8030 (17670)	7700 (16940)	7900 (17420)	7580 (16710)
Breakout force	kN (lbf)	119,9 (26950)	110,4 (24810)	119,7 (26930)	110,1 (24760)	106,8 (24000)	98,9 (22220)
Hydraulic lifting force at ground level	kN (lbf)	162,1 (36440)	162,2 (36470)	161,7 (36360)	161,9 (36390)	161,4 (36290)	161,6 (36320)
at max. height	kN (lbf)	63,4 (14250)	62,0 (13930)	63,5 (14250)	62,0 (13940)	62,7 (14090)	61,3 (13790)
A	mm (ft in)	7120 (23'4")	7200 (23'8")	7120 (23'4")	7200 (23'8")	7240 (23'9")	7320 (24')
L	mm (ft in)	5000 (16'5")	5050 (16'7")	5100 (16'9")	5150 (16'11")	5100 (16'9")	5150 (16'11")
V	mm (ft in)	2650 (8'8")	2650 (8'8")	2650 (8'8")	2650 (8'8")	2650 (8'8")	2650 (8'8")
a ₁ clearance circle	mm (ft in)	11820 (38'9")	11870 (38'11")	11820 (38'9")	11870 (38'11")	11880 (39')	11930 (39'2")
E	mm (ft in)	1010 (3'4")	1080 (3'7")	1010 (3'4")	1080 (3'7")	1110 (3'8")	1180 (3'10")
H	mm (ft in)	2810 (9'3")	2750 (9')	2810 (9'3")	2750 (9')	2730 (8'11")	2670 (8'9")
M	mm (ft in)	1050 (3'5")	1110 (3'8")	1050 (3'5")	1110 (3'8")	1130 (3'9")	1190 (3'11")
N	mm (ft in)	1620 (5'4")	1650 (5'5")	1620 (5'4")	1650 (5'5")	1660 (5'5")	1690 (5'7")
Weight distribution, front	kg (lb)	5130 (11310)	5300 (11680)	5160 (11380)	5340 (11770)	5390 (11890)	5560 (12250)
Weight distribution, rear	kg (lb)	7400 (16310)	7330 (16160)	7390 (16290)	7310 (16120)	7310 (16110)	7240 (15970)
Operating weight	kg (lb)	12530 (27620)	12630 (27840)	12550 (27670)	12650 (27890)	12700 (28000)	12800 (28220)

STANDARD EQUIPMENT

<p>Safety & comfort ROPS and FOPS cab Cab heating with filtered fresh air intake and defroster Tinted glass Ergonomically designed and adjustable operator's seat with seat belt Rear-view mirrors, external, two Rear-view mirror, internal, one Lighting: main headlamps, full-dipped beam/asym. (halogen) working lights, front (two, halogen) working lights, rear (two, halogen) parking lights side marker lights brake lights tail lights cab lighting instrument lighting direction indicators</p>	<p>Instrument panel with symbols Sun visor Safety start Mudguards Hazard warning flashers Windscreen wipers, front and rear Horn Ashtray Cigarette lighter Lifting eyes Pressure gauge, brake system Opening window</p>	<p>Engine & electrical system Fuel gauge Electric socket 24 V Battery disconnection switch Hour recorder Alternator Air cleaner with ejector emptying Engine temperature gauge Hydraulic transmission temperature gauge Control and warning lamps for: working lights, front/rear charging full-beam headlights direction indicators engine oil pressure hydraulic transmission oil pressure differential lock parking brake brake pressure hazard warning flashers air cleaner</p>	<p><i>Central warning: (standard on certain markets)</i> <i>Engine oil pressure, brake pressure, parking brake, engine temperature, transmission temperature</i></p> <p>Drivetrain Volvo BM Power Shift transmission Differential lock (front axle) Single-lever shift control Tires, 20.5 R 25"</p> <p>Hydraulic system Vane pump Control valve (3-spool) Pilot valve (3-spool) Bucket positioner Boom kick-out Bucket position indicator Hydraulic oil cooler</p>
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OPTIONAL EQUIPMENT (Standard on certain markets)

<p>Service and maintenance equipment Tool kit Lockable tool box Wheel nut wrench kit Air pressure equipment Anti freeze reservoir</p> <p>Engine equipment Oil-bath pre-cleaner Cyclone pre-cleaner Extra fuel filter Suction fan Preheating coil Engine block heater Low emission version High altitude version Fan lower speed Exhaust deflector Coolant filter Radiator corrosion protected</p> <p>Electrical equipment Central warning with buzzer Rotating beacon Voltmeter Engine oil pressure gauge</p>	<p>Transmission oil pressure gauge Asymmetrical headlights, left Extra working lights, front (two, halogen) Extra working lights, rear, (two, halogen) Working light dependent parking lights Attachment light (halogen) Registration plate light Back-up alarm</p> <p>Drivetrain equipment Volvo BM Automatic Power Shift (4F/3R) Interlock for 4th speed</p> <p>Cab equipment File pocket Heated seat Air conditioner Tilttable steering column Dual brake pedals Windscreen washer, front/rear Intermittent wiper, front Radio panel without radio</p>	<p>Speedometer and tachometer Lever lock for hydraulic levers Sliding window Instructor's seat Parking-brake alarm, acoustic Extra air outlet ROPS canopy Ventilation fan</p> <p>Hydraulic equipment 3rd hydraulic control 3rd and 4th hydraulic control 5th hydraulic control Single-acting lifting function Boom lowering system Hydraulic attachment bracket Automatic hose coupler Separate attachment locking</p> <p>External equipment Extended mudguards Slow moving vehicle sign Towing hitch</p>	<p>Protective equipment Protection guards for headlights Protection guards for rear working lights Protection guards for tail lights Guard for suction fan Guard for silencer Antiskid tape Vandalism protection kit Fuel fill protection</p> <p>Other equipment German version Compactor version Secondary steering High tone horn Parking brake, spring applied, hydraulically released Comfort Drive Control (CDC) Boom Suspension System</p>
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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.

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