



# Volvo BM L50



- **Engine output:**  
SAE J1349 Net 60 kW (82 hp)
- **Operating weight:**  
8,0 t (17 600 lb)
- **Buckets:**  
1,15-3,0 m<sup>3</sup> (1,5-3,9 yd<sup>3</sup>)
- Direct-injected, Volvo BM diesel
- Volvo BM Automatic Power Shift
- Precision steering and small turning radius
- Loader unit with parallel lift-arm action, high lift height and long reach
- Pilot operated hydraulic system
- The largest family of attachments on the market

#### **Productivity-boosting options**

- 8-speed transmission
- Dual-circuit hydraulics
- Comfort Drive Control

**VOLVO BM**

## ENGINE



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

### Air cleaning:

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

Make		Volvo BM	
Model		D 45 B	
Output, gross, at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	66	(90)
Flywheel output at	r/s (r/min)	36,7	(2200)
SAE J1349	kW (hp)	60	(82)
DIN 70020	kW (hp)	62	(84)
DIN 6271	kW (hp)	60	(82)
Max. torque at	r/s (r/min)	20	(1200)
SAE J1349 Gross	Nm (lbf ft)	315	(232)
SAE J1349 Net	Nm (lbf ft)	302	(223)
DIN 70020	Nm (lbf ft)	310	(229)
DIN 6271	Nm (lbf ft)	302	(223)
No. of cylinders		4	
Displacement, total	l (in <sup>3</sup> )	4,48	(273)
Bore	mm (in)	105,57	(4,16)
Stroke	mm (in)	128	(5)
Compression ratio		16,5 : 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	Ah	2x105	
Cranking capacity	A	2x575	
Reserve capacity	min	2x170	
Alternator rating	W/A	1540/60	
Starter motor output	kW (hp)	5,4	(7,3)

## SERVICE REFILL CAPACITIES



Crankcase	l (US gal)	10,5	(2,8)
Fuel tank	l (US gal)	160	(42,3)
Cooling system	l (US gal)	27	(7,1)
Transmission, total	l (US gal)	22	(5,8)
Front axle, total	l (US gal)	22,5	(6,0)
Rear axle, total	l (US gal)	22,5	(6,0)
Hydraulic system	l (US gal)	125	(33)
Hydraulic tank	l (US gal)	85	(22,5)

## DRIVETRAIN



**Torque converter:** single-stage, single-phase.

**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:** Volvo BM manufacture with torque proportioning differentials (Max-Trac) on front and rear axles.

**Hub reduction:** Volvo BM manufacture with planetary type hub reduction gears. Low-friction roller bearings on each 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 ratio		3,1 : 1	
Transmission, make		Volvo BM	
Model		HT 90	
Running speeds			
Low range (optional)			
1, forward/reverse	km/h (mile/h)	1,6	(0,9)
2, forward/reverse	km/h (mile/h)	3,2	(2,0)
3, forward/reverse	km/h (mile/h)	6,2	(3,8)
4, forward/reverse	km/h (mile/h)	11,7	(7,3)
High range			
1, forward/reverse	km/h (mile/h)	6	(3,7)
2, forward/reverse	km/h (mile/h)	12	(7,4)
3, forward/reverse	km/h (mile/h)	22	(13,6)
4, forward/reverse	km/h (mile/h)	37	(22,9)
Measurement with tires		15.5 - 25	
Front axle, make		Volvo BM	
Model		AH 31 A	
Rear axle, make		Volvo BM	
Model		AH 31 B	
Oscillation movement	± °	12	
	mm (in)	350	(13,8)

## 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 <sup>2</sup> (in <sup>2</sup> )	194	(30)
rear/wheel ea.	cm <sup>2</sup> (in <sup>2</sup> )	194	(30)
Accumulators		3	
volume, total	l (in <sup>3</sup> )	1,5	(91,5)
Parking brake			
area, total	cm <sup>2</sup> (in <sup>2</sup> )	70	(10,9)

## 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 cylinder			2	
Bore	mm	(in)	63	(2,5)
Piston rod diameter	mm	(in)	32	(1,3)
Stroke	mm	(in)	425	(16,7)
Relief pressure	MPa	(psi)	13	(1885)
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 "Overhead 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.

Emergency exits			3	
Ventilation	m <sup>3</sup> /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.

**Tilting function:** the valve has three positions: rollback, neutral and forward tilting.

**Cylinders:** double-acting.

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

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

<b>Main pump</b>				
Relief pressure	MPa	(psi)	20,5	(2970)
Flow	l/min		135	
	(US gal/min)			(35,7)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
<b>Pilot pump</b>				
Relief pressure	MPa	(psi)	3,5	
<b>Lifting cylinder</b>				
Bore	mm	(in)	90	(3,5)
Piston rod diameter	mm	(in)	50	(2)
Stroke	mm	(in)	955	(37,6)
<b>Tilting cylinder</b>				
Bore	mm	(in)	80	(3,5)
Piston rod diameter	mm	(in)	45	(1,8)
Stroke	mm	(in)	960	(37,8)
Lifting time *	s		5,5	
Tipping time *	s		0,9	
Lowering time (empty)	s		1,9	
Total cycle time	s		8,3	

\* with load, SAE

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

### Buckets

Straight bucket without teeth	1,15/1,25/1,4 m <sup>3</sup>	(1,5/1,6/1,8 yd <sup>3</sup> )
Straight bucket with teeth	1,15/1,25 m <sup>3</sup>	(1,5/1,6 yd <sup>3</sup> )
V-lip bucket without teeth	1,15 m <sup>3</sup>	(1,5 yd <sup>3</sup> )
Light materials bucket	2,1/2,5 m <sup>3</sup>	(2,75/3,25 yd <sup>3</sup> )
High-dump light materials bucket	1,6/3,0 m <sup>3</sup>	(2,1/3,9 yd <sup>3</sup> )
Grading bucket	1,6 m <sup>3</sup>	(2,1 yd <sup>3</sup> )
Sand spreading bucket	2,0 m <sup>3</sup>	(2,6 yd <sup>3</sup> )
Multi-purpose bucket	1,0 m <sup>3</sup>	(1,25 yd <sup>3</sup> )

### Timber grapples

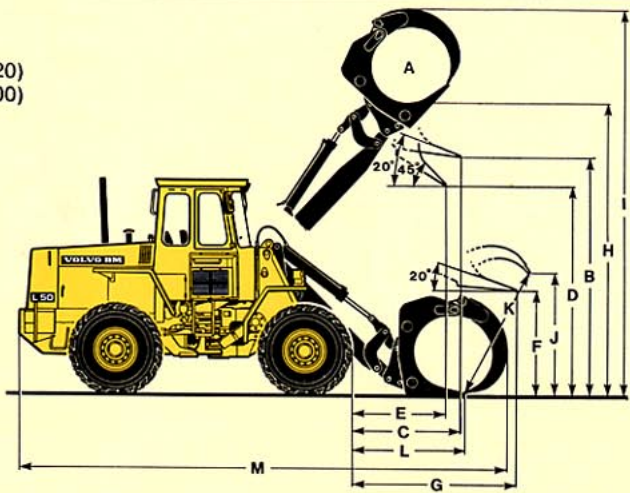
Sorting/unloading grapple	0,9 m <sup>2</sup>	(9,7 ft <sup>2</sup> )
Tree length grapple	0,7 m <sup>2</sup>	(7,5 ft <sup>2</sup> )
Heel kickout		

### Examples of other attachments

Pallet forks	Asphalt cutter
Breakout forks	Diagonal snow blade
Pallet fork with tine positioner	Sweeper
Combination forks	Snow blower
Material handling arms	Grass and bush cutter
Hydraulic clamping grapple	

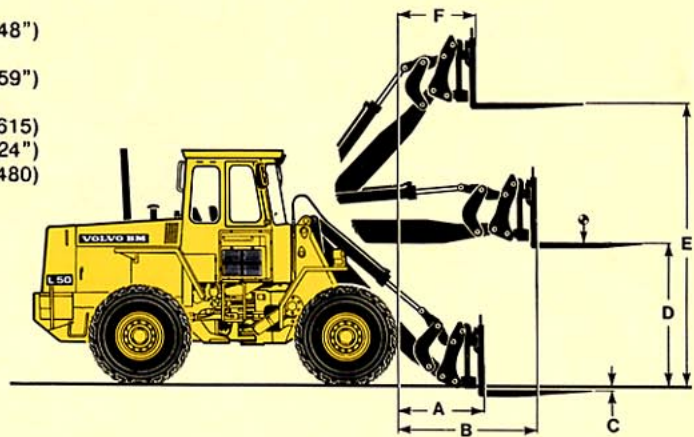
## Sorting Grapple (90259 Hook-On)

Operating weight		kg	(lb)	8400	(18520)
Operating load		kg	(lb)	2270	(5000)
A	m <sup>2</sup>	(ft <sup>2</sup> )	0,9	(9,7)	
B	mm	(ft in)	3360	(11'0")	
C	mm	(ft in)	1330	(4'4")	
D	mm	(ft in)	2955	(9'8")	
E	mm	(ft in)	1080	(3'7")	
F	mm	(ft in)	1550	(5'1")	
G	mm	(ft in)	2200	(7'3")	
H	mm	(ft in)	4100	(13'5")	
I	mm	(ft in)	5410	(17'9")	
J	mm	(ft in)	1775	(5'10")	
K	mm	(ft in)	1930	(6'4")	
L	mm	(ft in)	1510	(4'11")	
M	mm	(ft in)	6650	(21'10")	



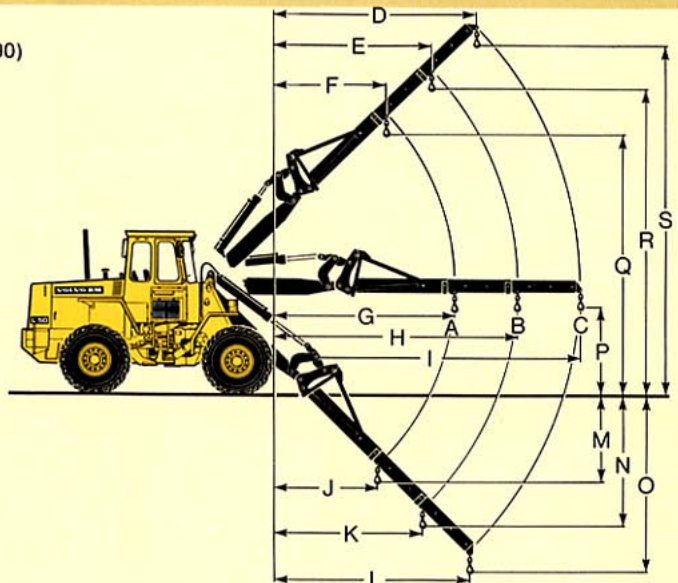
## Pallet Fork (Hook-On)

Fork tine, order no.		mm	(ft in)	97789	1225	(48")
Length		mm	(ft in)	97792	1500	(59")
Fork frame, order no.		mm	(ft in)			
Width		mm	(ft in)			
Max permissible load according to SS 3462 at load center distance		kg	(lb)	3000	(6615)	
Operating weight		kg	(lb)	600	(24")	
		kg	(lb)	7930	(17480)	
A	mm	(ft in)	720	(2'4")		
B	mm	(ft in)	1540	(5'0")		
C	mm	(ft in)	10	(0,4")		
D	mm	(ft in)	1770	(5'10")		
E	mm	(ft in)	3580	(11'9")		
F	mm	(ft in)	670	(2'2")		



## Material Handling Arm (97824 Hook-On)

Operating weight		kg	(lb)	7890	(17390)
A	kg	(lb)	1120	(2470)	
B	kg	(lb)	940	(2070)	
C	kg	(lb)	750	(1655)	
D	mm	(ft in)	2740	(9'0")	
E	mm	(ft in)	2110	(6'11")	
F	mm	(ft in)	1510	(4'11")	
G	mm	(ft in)	3245	(10'8")	
H	mm	(ft in)	4310	(14'2")	
I	mm	(ft in)	5440	(17'10")	
J	mm	(ft in)	1760	(5'9")	
K	mm	(ft in)	2510	(8'3")	
L	mm	(ft in)	3310	(10'10")	
M	mm	(ft in)	1700	(5'7")	
N	mm	(ft in)	2460	(8'1")	
O	mm	(ft in)	3260	(10'8")	
P	mm	(ft in)	1530	(5'0")	
Q	mm	(ft in)	5100	(16'9")	
R	mm	(ft in)	6000	(19'8")	
S	mm	(ft in)	6930	(22'9")	



### ALTERATION OF DIMENSIONAL DATA

Tires		15.5-25	15.5 R 25 *			
Liquid ballast in rear tires		75 % CaCl <sub>2</sub>	-			
Width over wheels	mm (in)	-	± 0			
Ground clearance	mm (in)	-	± 0			
Tipping load at full turn	kg (lb)	450 (990)	140 (310)			
Operating weight	kg (lb)	430 (950)	160 (350)			

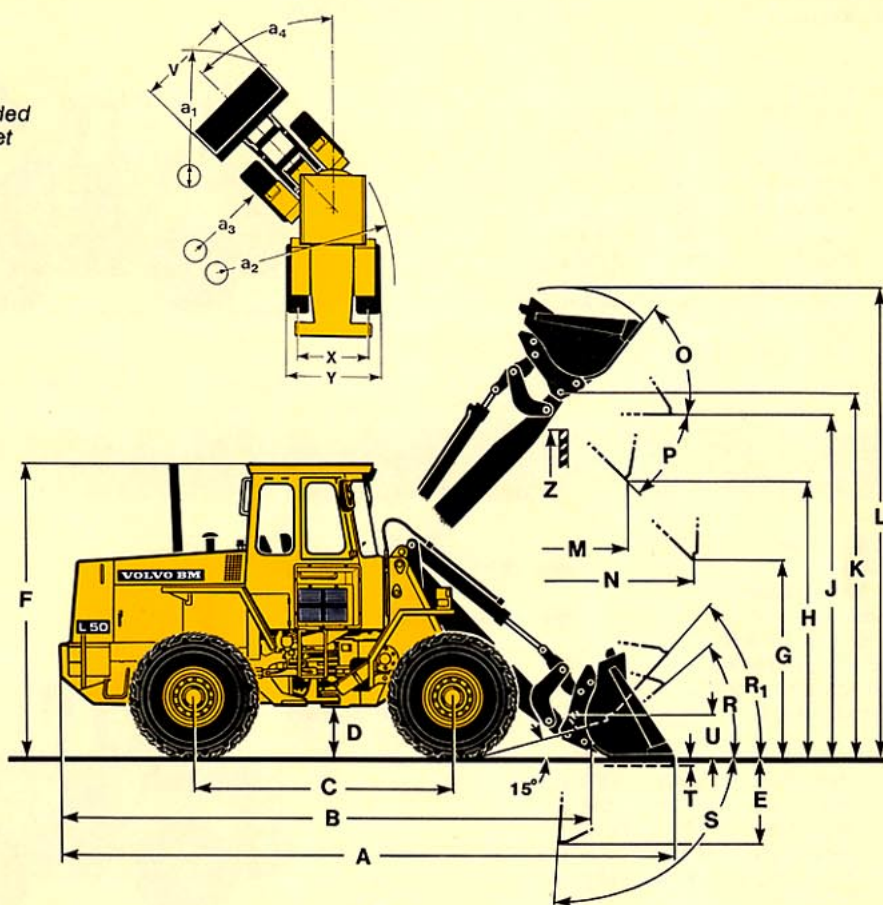
# DIMENSIONAL DATA VOLVO BM L50

Tires: 15.5 - 25/12 L-2 SGL

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)	5080	(16'8")
C	mm (ft in)	2700	(8'10")
D	mm (ft in)	385	(1'3")
F	mm (ft in)	2940	(9'8")
G	mm (ft in)	2000	(6'7")
J	mm (ft in)	3500	(11'6")
K	mm (ft in)	3710	(12'2")
O	°	52	
P	°	45	
R	°	41	
R <sub>1</sub> *	°	46	
°	°	51	
S	°	91	
T	mm (ft in)	95	(4")
U	mm (ft in)	340	(1'1")
°	mm (ft in)	520	(1'8")
X	mm (ft in)	1750	(5'9")
Y	mm (ft in)	2150	(7'1")
Z	mm (ft in)	3450	(11'4")
a <sub>2</sub>	mm (ft in)	4785	(15'8")
a <sub>3</sub>	mm (ft in)	2630	(8'8")
a <sub>4</sub>	± °	40	

\* Carrying position SAE  
° In practical carry position



### Bucket type

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

Order No.		90253	90039	90251	99776	99778	98018
Mounting / Bucket type		D / 1	R / 1	D / 1	R / 1	R / 1	R / 1
Volume, heaped	m <sup>3</sup> (yd <sup>3</sup> )	1,15 (1,5)	1,15 (1,5)	1,25 (1,6)	1,25 (1,6)	1,4 (1,8)	2,5 (3,3)
Volumetric weight	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	1800 (3000)	1800 (3000)	1600 (2700)	1600 (2700)	1500 (2500)	700 (1200)
Static tipping load, straight	kg (lb)	5210 (11490)	4850 (10690)	5210 (11490)	4860 (10710)	4710 (10340)	4480 (9880)
at 35° turn	kg (lb)	4660 (10270)	4310 (9500)	4650 (10250)	4320 (9520)	4190 (9240)	3970 (8750)
at full turn	kg (lb)	4490 (9900)	4180 (9170)	4490 (9900)	4160 (9170)	4200 (9000)	3810 (8400)
Breakout force	kN (lbf)	74,7 (16790)	67,6 (15200)	74,2 (16680)	67,5 (15170)	60,1 (13510)	43,2 (9710)
Hydraulic lifting force at ground level	kN (lbf)	101,4 (22790)	102,4 (23020)	101,4 (22790)	101,9 (22910)	102,7 (23090)	103,0 (23150)
at max. height	kN (lbf)	34,3 (7710)	32,4 (7280)	34,7 (7800)	32,6 (7330)	31,6 (7100)	30,3 (6810)
A	mm (ft in)	6030 (19'9")	6100 (20')	6030 (19'9")	6100 (20')	6200 (20'4")	6580 (21'7")
L	mm (ft in)	4610 (15'1")	4600 (15'1")	4690 (15'5")	4700 (15'5")	4670 (15'4")	4690 (15'5")
V	mm (ft in)	2300 (7'7")	2300 (7'7")	2300 (7'7")	2300 (7'7")	2300 (7'7")	2430 (7'11")
a <sub>1</sub> clearance circle	mm (ft in)	10490 (34'5")	10540 (34'7")	10500 (34'5")	10540 (34'7")	10600 (34'9")	10910 (35'9")
E	mm (ft in)	790 (2'7")	860 (2'10")	790 (2'7")	860 (2'10")	970 (3'2")	1340 (4'5")
H	mm (ft in)	2910 (9'7")	2860 (9'5")	2910 (9'7")	2860 (9'5")	2790 (9'2")	2520 (8'3")
M	mm (ft in)	780 (2'7")	840 (2'9")	780 (2'7")	840 (2'9")	910 (3')	1180 (3'11")
N	mm (ft in)	1470 (4'10")	1500 (4'11")	1470 (4'10")	1500 (4'11")	1540 (5'1")	1650 (5'5")
Weight distribution, front	kg (lb)	3510 (7740)	3730 (8220)	3540 (7800)	3760 (8290)	3870 (8530)	4090 (9020)
Weight distribution, rear	kg (lb)	4340 (9560)	4260 (9390)	4330 (9550)	4250 (9370)	4210 (9280)	4130 (9100)
Operating weight	kg (lb)	7850 (17300)	7990 (17610)	7870 (17350)	8010 (17660)	8080 (17810)	8220 (18120)

## STANDARD EQUIPMENT

### Safety & comfort

ROPS and FOPS cab  
Cab heating with filtered fresh air intake and defroster  
Tinted glass  
Ergonomically designed and adjustable operator seat with seat belt  
Rear-view mirrors, external, two  
Rear-view mirror, internal, one  
Lighting:  
main headlamps, full-dipped beam/asym. (halogen)  
parking lights  
working lights, front (two, halogen)  
working lights, rear (two, halogen)  
side marker lights

brake lights  
rear lights  
cab lighting  
instrument lighting  
direction indicators  
Instrument panel with symbols  
Sun visor  
Safety start  
Mudguards  
Hazard warning flashers  
Windscreen wipers, front & rear  
Horn  
Ashtray  
Cigarette lighter  
Lifting eyes  
Lockable tool box  
Opening window  
Wrist support

### Engine & electrical system

Fuel gauge  
Electric socket 24 V  
Battery disconnection switch  
Control and warning lamps for:  
working lights, front/rear charging  
full-beam headlights  
direction indicators  
engine oil pressure  
hydraulic transmission pressure  
parking brake  
brake pressure  
hazard warning flashers  
air cleaner  
Air cleaner with ejector emptying  
Engine temperature gauge  
Hydraulic transmission temperature gauge  
Hour recorder  
Alternator

Central warning (standard on certain markets):  
Engine oil pressure, brake pressure, parking brake, engine temperature, transmission temperature.

### Drivetrain

Volvo BM Power Shift transmission  
Torque proportioning differentials, (Max-Trac) front and rear axles  
Single-lever shift control  
Tires, 15.5-25/12 L2

### Hydraulic system

Control valve (3-spool)  
Pilot valve (3-spool)  
Tilt position indicator  
Vane pump

## OPTIONAL EQUIPMENT (Standard on certain markets)

### Service and maintenance equipment

Tool kit  
Wheel nut wrench kit  
Air pressure equipment

### Engine equipment

Low emission version  
High altitude version  
Pre-cleaner, oil-bath  
Engine block heater  
Preheating coil  
Coolant filter  
Speed limiter

### Electrical equipment

Rotating beacon  
Trailer contact  
Working light-dependent parking lights  
Extra working lights, rear (two, halogen)  
Extra working lights, front (two, halogen)  
Road lights (left-hand asymmetrical, halogen)

Central warning with buzzer  
Back-up alarm  
Registration plate lighting  
High tone horn  
Voltmeter  
Engine oil pressure gauge  
Hydraulic transmission oil pressure gauge

### Drivetrain equipment

Volvo BM Automatic Power Shift (4F/3R)  
Transmission, 8 speeds  
Differential lock 100%

### Cab equipment

File pocket  
Heated seat  
Air conditioner  
Tiltable steering column  
Dual brake pedals  
Windscreen washer  
Intermittent wiper, front  
Radio panel without radio  
Speedometer and tachometer

Interlock for hydraulic levers  
Instructor's seat  
Sliding window  
Parking-brake alarm, acoustic  
Extra air outlet

### Hydraulic equipment

3rd hydraulic control  
3rd and 4th hydraulic control  
Hydraulic oil cooler  
Single-acting lifting function  
Dual-circuit hydraulic  
Automatic hose coupler  
Separate attachment locking  
Boom lowering system  
Lift detent  
Parking brake, spring applied, hydraulically released  
Boom kick-out  
Bucket positioner

### External equipment

Extended mudguards  
Slow Moving Vehicle sign  
Towing hitch

### Protective equipment

Protection guards for headlights  
Protection guards for rear working lights  
External noise reduction kit  
Exhaust deflector  
Vandalism kit  
Anti skid protection equipment  
Protection plate transmission

### Other equipment

Secondary steering  
Bracket for rear mounted attachments  
Hydraulic attachment bracket  
Comfort Drive Control (CDC)  
German version

*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.*

## VME Industries Sweden AB

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