



# Volvo BM L120B



- *Engine output gross:  
SAE J1349 148 kW (200 hp)*
- *Operating weight:  
15,4 t (33,930 lb)*
- *Buckets:  
2,7-4,6 m<sup>3</sup> (3.5-6.0 yd<sup>3</sup>)*
  
- *Direct-injected, turbocharged  
Volvo diesel*
- *Volvo BM Automatic Power Shift*
- *Precision steering and small  
turning radius*
- *Care Cab – the cab with great  
comfort and safety*
- *Contronic monitoring system*
- *Loader unit with parallel lift-arm  
action, high lift height and long  
reach*
- *Pilot operated hydraulic system*
- *Ample breakout and lifting forces*
- *The largest family of attachments  
on the market*

**VOLVO BM**



## ENGINE

Direct-injected, turbocharged 6-cylinder in-line 4-cycle diesel.

### Air cleaning

1. Cyclone pre-cleaner with automatic dust ejector.
2. Paper filter with restriction warning light on instrument panel.
3. Replaceable safety filter.

Make	Volvo			
Model	TD71G			
Max. rating* at	rps	rpm	36,7	2200
SAE J1349 (ISO 1585)	kW	hp	148	200
Flywheel rating** at	rps	rpm	36,7	2200
SAE J1349 (ISO 1585)	kW	hp	140	190
DIN 70020/6271	kW	hp	140	190
Max. torque at	rps	rpm	23,3	1400
SAE J1349 (gross)	N•m	lbf ft	538	730
SAE J1349 (ISO 1585) (net)	N•m	lbf ft	705	523.7
DIN 70020/6271	N•m	lbf ft	705	523.7
Number of cylinders	6			
Displacement, total	dm <sup>3</sup>	in <sup>3</sup>	6,7	409
Bore	mm	in	104,77	4.1
Stroke	mm	in	130	5.1



## ELECTRICAL SYSTEM

*Contronic* monitoring system with extended function surveillance. Solid-state electrical distribution box. The electrical system is well-protected by fuses. Prewired for optional equipment.

### Central warning:

Central warning lamp for following functions: engine oil pressure, brake pressure, parking brake (buzzer as well), engine temperature (buzzer as well) transmission temperature, transmission oil pressure, secondary steering (optional equipment).

Voltage	V	24
Batteries (12 volt) no.	V	2x12
Battery capacity, ea.	Ah	2x140
Cranking capacity, ea.	A	800
Reserve capacity, ea.	min	270
Alternator rating	W / A	1680 / 60
Starter motor output	kW hp	5,4 7.3



## SERVICE REFILL CAPACITIES

Crankcase with filter		US gal	22	5.8
Fuel tank		US gal	255	67
Cooling system		US gal	65	17.2
Transmission, total		US gal	33	8.7
Drop-box		US gal	4,7	1.2
Front axle, total		US gal	35	9.2
Rear axle, total		US gal	38	10.0
Hydraulic system		US gal	220	58
Hydraulic tank		US gal	155	41



## DRIVETRAIN

**Torque Converter:** Single-stage, single-phase.

**Transmission:** Volvo BM automatic powershift transmission. Countershaft-type with bi-directional clutch modulation. Single lever control. Four speeds forward, three reverse.

**Axles:** Full-floating axle half-shafts with planetary final gear reduction. Single piece cast axle housings. Fixed front axle and oscillating rear axle.

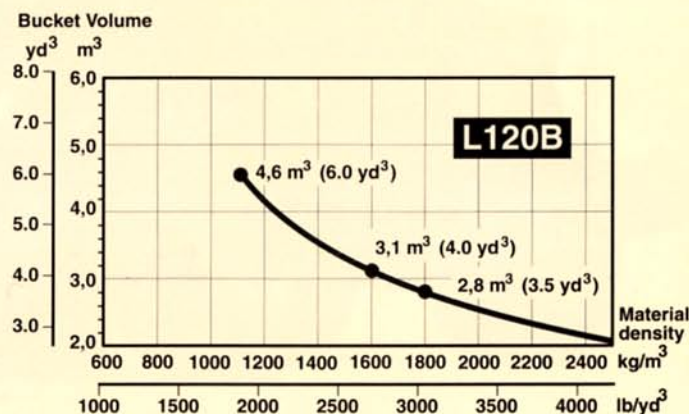
**Differentials:** 100% differential lock on front axle controlled by floor switch.

**Hub Reduction:** Planetary-type final drive reduction with low-friction roller bearings mounted in each wheel hub.

**Tires:** Tubeless with nylon cord body. Other tires available for different applications.

Torque multiplication	2.33:1		
Transmission make	Volvo BM		
Model	HT 131		
Speeds, forward/reverse			
1	km/h	mph	6,8 4.2
2	km/h	mph	12,7 7.9
3	km/h	mph	26,9 16.7
4 (forward only)	km/h	mph	38,6 24.0
Measured with tires	23.5 R25*		
Front axle make	Volvo BM		
Rear axle make	Volvo BM		
Rear axle oscillation, total	±°		26°
	mm	in	450 18

## BUCKET SELECTION DIAGRAM



## ALTERATION OF DIMENSIONAL DATA

Tires:	23.5-25(16PR)L-2	23.5-25(16PR)L-3	Without Counterweight 1	With *Counterweight 2	Wherever applicable, specifications are in accordance with SAE Standards J732 and J742. Changes from the standard configuration may change machine dimensions and operating data. Operating weight is approximate and includes the bucket given in the table, counterweight 1, and all standard equipment.
Optional counterweight	kg lb		320 705	+ 680 1500	*Counterweight only recommended for stabilizing purposes in timber and pallet handling on hard and level ground. May only be combined with counterweight 1 in timber and pallet handling on hard and flat surface.
Width over wheels	mm in				
Ground clearance	mm in				
Tipping load at full turn	kg lb	- 150 - 330	- 580 1280	+ 1100 2425	
Operating weight	kg lb	- 256 - 570	- 320 705	+ 680 1500	



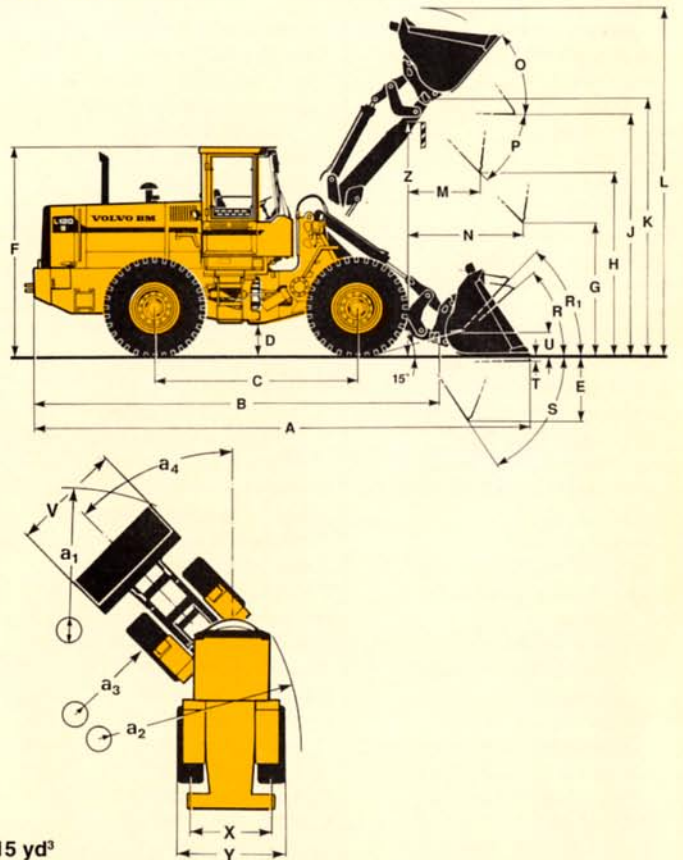
# DIMENSIONAL DATA VOLVO BM L120B

Tires: 23.5 R 25\*

Where applicable, specifications and dimensions are in accordance with ISO 7131, SAE J732 FEB80, ISO 7546, SAE J742 FEB85, ISO 5998, SAE J818 MAY87.

B	mm	ft in	6330	20'10"
C	mm	ft in	3200	10'6"
D	mm	ft in	435	1'5"
F	mm	ft in	3345	10'7"
G	mm	ft in	2135	7'0"
J	mm	ft in	3760	12'4"
K	mm	ft in	3990	13'1"
O	°		54	
P	°		45	
R	°		42	
R <sub>1</sub> *	°		46	
**	°		56	
S	°		58	
T	mm	ft in	50	2"
U	mm	ft in	350	1'2"
**	mm	ft in	600	2'0"
X	mm	ft in	2070	6'9"
Y	mm	ft in	2680	8'10"
Z	mm	ft in	3690	12'1"
a <sub>2</sub>	mm	ft in	5730	18'10"
a <sub>3</sub>	mm	ft in	3070	10'1"
a <sub>4</sub>	± °		40	

\* Carrying position SAE  
\*\* In practical carry position



† Bolt-on Cutting Edge Increases Bucket Capacity By 0.11 m<sup>3</sup>/ 0.15 yd<sup>3</sup>

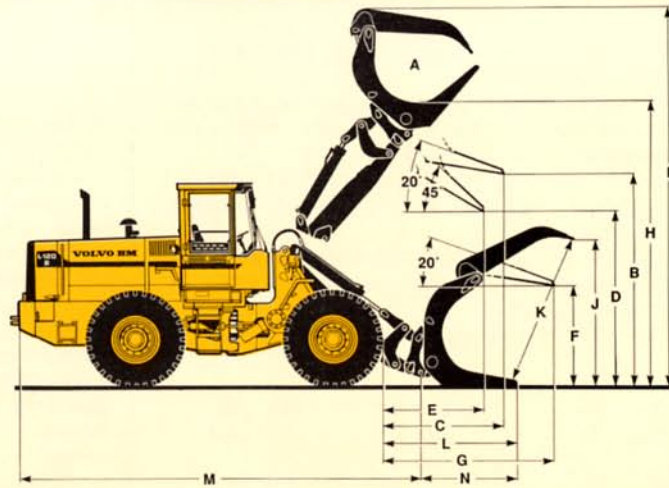
		Pin-On		Hook-On		Pin-On		Hook-On		Pin-On		Hook-On	
Volume, heaped	m <sup>3</sup> yd <sup>3</sup>	3,1	4.0	3,1	4.0	2,8	3.7	2,8	3.7	4,6	6.0	4,6	6.0
Struck	m <sup>3</sup> yd <sup>3</sup>	2,5	3.3	2,5	3.3	2,2	2.9	2,2	2.9	3,75	4.9	3.75	4.9
Static tipping load, straight	kg	13400		12900		13400		12900		12700		12200	
	lb	29,540		28,440		29,540		28,440		28,000		26,900	
at 35° turn	kg	11800		11300		11800		11300		11100		10700	
	lb	26,015		24,910		26,015		24,910		24,470		23,590	
at full turn	kg	11300		10800		11300		10800		10600		10200	
	lb	24,910		23,810		24,910		23,810		23,370		22,490	
Breakout force	kN	151,8		139,9		152,7		140,7		113,5		104,2	
	lbf	34,120		31,450		34,330		31,630		23,270		23285	
A	mm	7640		7710		7620		7710		8090		8170	
	ft in	25'1"		25'4"		25'		25'4"		26'6"		26'10"	
L	mm	5410		5460		5310		5350		5540		5600	
	ft in	17'9"		17'11"		17'5"		17'7"		18'2"		18'4"	
V	mm	2850		2850		2850		2850		2850		2850	
	ft in	9'4"		9'4"		9'4"		9'4"		9'4"		9'4"	
a <sub>1</sub> clearance circle	mm	12560		12610		12560		12610		12640		12700	
	ft in	41'2"		41'5"		41'2"		41'5"		41'6"		41'8"	
E	mm	1070		1140		1070		1140		1430		1500	
	ft in	3'6"		3'9"		3'6"		3'9"		4'8"		4'11"	
H	mm	2890		2830		2890		2830		2580		2520	
	ft in	9'6"		9'4"		9'6"		9'4"		8'6"		8'3"	
M	mm	1070		1140		1070		1140		1380		1430	
	ft in	3'6"		3'9"		3'6"		3'9"		4'6"		4'8"	
N	mm	1620		1650		1620		1650		1830		1860	
	ft in	5'4"		5'5"		5'4"		5'5"		6'0"		6'1"	
Weight distribution, front	kg	6100		6300		6100		6300		6500		6700	
	lb	13,450		13,890		13,450		13,890		14,330		14,770	
Weight distribution, rear	kg	9600		9500		9600		9500		9500		9400	
	lb	21,160		20,940		21,160		20,940		20,940		20,720	
Operating weight	kg	15700		15800		15700		15800		16000		16100	
	lb	34,610		34,830		34,610		34,830		35,270		35,490	

Counterweight 1: 320 kg, 706 lb is included in the specifications.



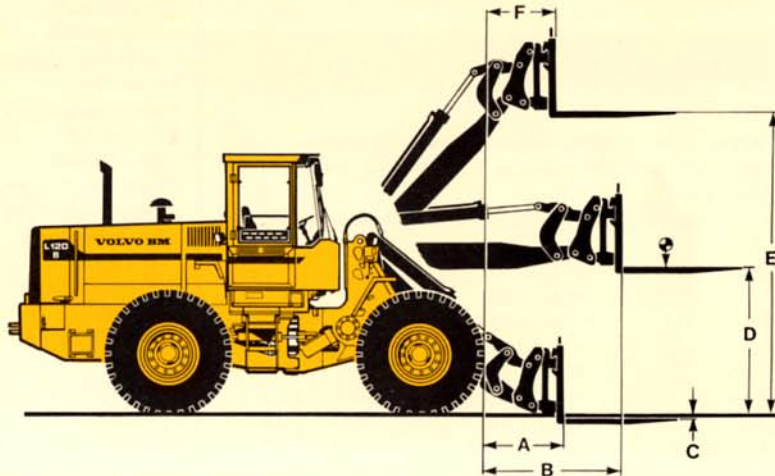
## GENERAL PURPOSE GRAPPLE (Hook-On)

Operating weight	kg	lb	16050	35,400
Operating load	kg	lb	5775	12,700
A	m <sup>2</sup>	ft <sup>2</sup>	1,3	14.0
B	mm	ft in	3450	11'3"
C	mm	ft in	1960	6'5"
D	mm	ft in	2790	9'1"
E	mm	ft in	1575	5'2"
F	mm	ft in	1540	5'0"
G	mm	ft in	2770	9'1"
H	mm	ft in	4565	15'0"
I	mm	ft in	6060	19'10"
J	mm	ft in	2290	7'6"
K	mm	ft in	2350	7'8"
L	mm	ft in	2095	6'10"
M	mm	ft in	6305	20'8"
N	mm	ft in	1920	6'4"



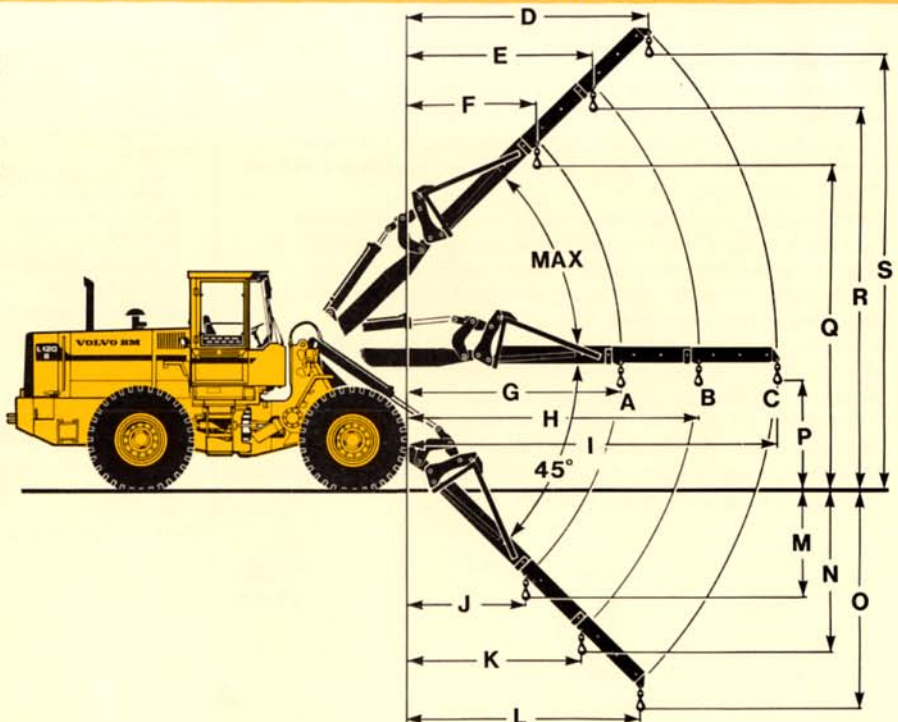
## PALLET FORK (Hook-On)

Fork tine, length	mm	ft in	1225	4'0"
Fork frame, width	mm	ft in	1500	4'11"
Distance to centre of gravity, level fork tines	mm	ft in	600	2'0"
Operating weight	kg	lb	15200	33,500
Safe working load according to SS 3462	kg	lb	7300	16,100
A	mm	ft in	760	2'6"
B	mm	ft in	1565	5'2"
C	mm	ft in	0	0"
D	mm	ft in	1900	6'3"
E	mm	ft in	3810	12'6"
F	mm	ft in	755	2'6"



## MATERIAL HANDLING ARM (Hook-On)

Operating weight	kg	lb	15200	33,500
Operating load at position	kg	lb		
A	kg	lb	2970	6540
B	kg	lb	2365	5200
C	kg	lb	1940	4400
D	mm	ft in	2640	8'8"
E	mm	ft in	2040	6'10"
F	mm	ft in	1495	4'10"
G	mm	ft in	3245	10'7"
H	mm	ft in	4280	14'0"
I	mm	ft in	5410	17'9"
J	mm	ft in	1760	5'9"
K	mm	ft in	2490	8'6"
L	mm	ft in	3290	10'10"
M	mm	ft in	1750	5'9"
N	mm	ft in	2480	8'1"
O	mm	ft in	3280	10'9"
P	mm	ft in	1650	5'5"
Q	mm	ft in	5410	17'9"
R	mm	ft in	6285	20'7"
S	mm	ft in	7245	23'9"







## BRAKE SYSTEM

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

**Service brakes:** Hydraulically operated dry disc brakes. Application of brake pedal applies brakes and also neutralizes transmission when transmission disengaging switch is activated.

**Secondary:** Dual circuit system. Actuated by service brake pedal. Visual low pressure alarm. Dead engine braking pressure provided by accumulators in each circuit.

**Parking brake:** Disc brake on front output shaft of transmission. Warning lamp for brake applied. Flashing central warning light if gear lever is in forward or reverse.

**Filtration:** Full-flow 10 micron filter pump: fixed displacement gear type.

Brake friction area				
Front wheel (ea.)	cm <sup>2</sup>	in <sup>2</sup>	810	126
Rear wheel (ea.)	cm <sup>2</sup>	in <sup>2</sup>	405	62.8
Reservoirs, no.			2	
Volume, total	l	in <sup>3</sup>	1.5	91.5
Parking brake area, total	cm <sup>2</sup>	in <sup>2</sup>	100	15.5



## STEERING SYSTEM

Articulated frame. Load-sensing hydrostatic steering system.

**Pump:** Variable flow axial piston pump, mounted to a power take-off on the transmission.

**Cylinders:** Two double-acting cylinders with chrome plated piston rods.

Steering cylinders, no.				
Bore	mm	in	80	3.2
Rod diameter	mm	in	50	2.0
Stroke	mm	in	440	17.3
Relief pressure	MPa	psi	21	2755
Steer pump output	l/min	US gpm	97	25.6
at pressure	MPa	psi	10	1450
and engine speed	rps	rpm	36,7	2200



## CAB

**Safety and comfort:** Tested and approved according to standards: ROPS (ISO/CD 3471-1990, SAE J1040 APR88), FOPS (ISO 3449-1984, SAE J231), and meets standard according to "Overhead guards for rider lift trucks" (ISO 6055-1981) and "Operator Restraint System" (SAE J386).

The *Care Cab* has convenient boarding steps and a wide door opening. It is lined on the inside with sound-absorbent material and mounted on 4 rubber pads to damp sound and inhibit vibration. Large glazed areas, good all-round visibility. The windshield is curved and made of laminated green-tinted glass.

All important operator information is presented clearly visible in front of the operator. Information panel for *Contronic* monitoring system.

**Heater and defroster:** Heating element with filtered fresh air and 4-speed fan with defroster outlets for all windows.

**Operator's seat:** Spring-suspended, adjustable operator's seat with lap belt. The seat is hung on a bracket on the rear wall. The force from the lap belt is absorbed by the seat rails.

Emergency exits				
Ventilation	m <sup>3</sup> /min	cfm	10	353
Heating capacity	KW	Btu/h	11	37,500
Operator's seat	ISRI		6000/575	
Sound level in cab as per ISO 6394	dB(A)		75	



## HYDRAULIC SYSTEM

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

**Pumps:** Double vane type, mounted to a power take-off on the transmission.

**System Supply:** Pumps 1 and 2 supply the main hydraulic functions until the system pressure exceeds 18 MPa 2610 psi, when Pump 2 is diverted to tank. The pilot system is supplied from a combined pilot/brake pump mounted in series with the steering pump.

**Valve:** Three-spool valve with built-in pressure relief valve. Activated by a pilot valve, it is mounted on front frame for easy access.

**Lift function:** The valve has four positions: raise, hold, lower and float. An automatic kickout detent is adjustable for any position between maximum reach and full lift height.

**Tilt function:** The valve has three positions: rollback, hold and dump. Automatic bucket positioner adjustable to any desired loading angle.

**Cylinders:** Double-acting.

**Filters:** Full-flow 10 micron nominal return filter with magnetic core, located in hydraulic oil tank.

**Load Unit:** Hydraulic cylinders mounted in line with lifting arms.

### Pump No. 1

Relief pressure	MPa	psi	21	3050
Pump output	l/min	US gpm	196	51.8
at pressure	MPa	psi	10	1450
and engine speed	rps	rpm	36,7	2200

### Pump No. 2

Relief pressure	MPa	psi	18	2600
Pump output	l/min	US gpm	81	21.4
at pressure	MPa	psi	10	1450
and engine speed	rps	rpm	36,7	2200

Output, pump total

Output, pump total	l/min	US gpm	277	73.2
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Lift cylinders, no.

Lift cylinders, no.			2	
Bore	mm	in	140	5.5
Rod diameter	mm	in	70	2.8

Stroke

Stroke	mm	in	980	38.6
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Tilt cylinders, no.

Tilt cylinders, no.			2	
Bore	mm	in	125	4.9
Rod diameter	mm	in	60	2.4

Stroke

Stroke	mm	in	830	32.7
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Raising time (loaded)

Raising time (loaded)	s		6,5	
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Dumping time (loaded)

Dumping time (loaded)	s		1,5	
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Lowering time (empty)

Lowering time (empty)	s		3,1	
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Total cycle time

Total cycle time	s		11,1	
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## ATTACHMENTS

(for further information please contact your local dealer)

### Buckets

- High-Dump Light Materials
- Light Materials
- Multi-Purpose
- Side Dump
- Spade Nose with Teeth
- Straight Edge
- Straight Edge with Teeth

### Fork Equipment

- Fork Frame
- Fork Tines
- Forklift Carrier with One-Piece Top Clamp
- Forklift Carrier with Two Independent Top Clamps
- Forklift Carrier with Tine Positioner

### Other Attachments

- Bale Clamp
- Drum Rotator
- Broom

- Diagonal Snow Blade
- Material Handling Arm, Telescopic Manually, Pinned Positions
- Material Handling Arm with Hydraulic Folding, Telescopic Manually, Pinned Positions

### Timber Grapples

- General Purpose
- Sorting
- Unloading
- Heel Kickout for Use Only on the Sorting and Unloading Grapples - Requires Hydraulic Control for 4th Function
- Log Pusher



## STANDARD EQUIPMENT

<p>Air cleaner, dry type dual element, exhaust aspirated precleaner Alternator, 24V, 60 AMP Battery disconnect, lockable Boom kickout, automatic Brakes, 4-wheel, hydraulic, disc type, dual circuit Brake system, secondary Bucket leveler, automatic with position indicator Bucket lever detent Cab access steps &amp; handrails, (SAE J185) Cab: ROPS (SAE J1040C) (ISO 3471) FOPS (SAE J231) (ISO 3449) acoustical lining ash tray, cigarette lighter door, lockable (left side access) electrical system: 24V, pre-wired for optional accessories environmental control: heater/defroster/pressurizer 11kW 37,500 Btu/h with four-speed blower fan, filtered air floor mat interior light</p>	<p>interior rearview mirror safety glass, tinted seat belt (SAE J386) seat, suspension, 6-way adjustable heated steering wheel, adjustable tilt, telescopic storage compartment sun visor windshield washer, front &amp; rear windshield wiper, front, intermittent windshield wiper, rear Cold starting aids: engine intake manifold pre-heater (ROPS Cab only) engine fuel enrichment Differentials: front, hydraulically operated differential lock rear, conventional Drawbar with pin Engine coolant filter Exhaust rain cap (elbow type) Fenders, front &amp; rear Fuel water separator Hydraulic control lever safety latch Hydraulic oil cooler Hydraulic pressure test ports, quick connect Instrument/gauges, illuminated: brake system pressure gauge</p>	<p>engine coolant temperature gauge fuel gauge hourmeter temperature gauge sight gauges: brake fluid level coolant level hydraulic fluid level fuel gauge engine temperature gauge Transmission/converter fluid temperature gauge Isolation mounts: cab, engine, transmission Lifting lugs Lights: driving (2-front), halogen with high/low beam, parking lights, side marker lights, stop/tail combination (2-rear) turn signals with hazard warning switch work lights, halogen (2-front, 2-rear) Mirrors, rearview, (2), exterior Muffler, spark arresting Neutral start feature Side panels, engine hood Steering frame lock Tires: 23.5-25(16PR) L-2 General Transmission: modulated, with single lever control, automatic power shift, and</p>	<p>operator controlled declutch Valve, main hydraulic, three (3) spool, pilot operated Vandalism lock, provision for: batteries, engine coolant engine oil, fuel, hydraulic fluid converter/transmission fluid Warning alarms: central warning audible engine coolant parking brake horn, electric reverse alarm (SAE J994) Warning &amp; monitoring lights: air cleaner restriction alternator malfunction central warning lamp: brake system pressure engine coolant temperature engine oil pressure parking brake applied (transmission in forward or reverse) transmission fluid temperature transmission oil pressure differential lock engine intake manifold preheater high beam driving lights parking brake applied</p>
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## OPTIONAL EQUIPMENT

<p>Air conditioner, 7 kW 24,000 Btu/h Air precleaner, heavy duty cyclone, turbo II type oil bath type Attachment rib kit Beacon, amber rotating Boom suspension system Bucket teeth, bolt-on, (8) (not for use on light material buckets) Cold starting aid, engine preheater-coolant and oil (110V - 1500W) Comfort drive control (CDC) Counterweight</p>	<p>Cutting edge, 3 pc. reversible bolt-on (not for use on high tip buckets) Dual service brake pedal Engine fan, suction Engine, high altitude version, factory installed Engine, low emission version, factory installed Engine shutdown to idle kit Guards: belly plates headlights, front muffler guard taillights, rear windshield</p>	<p>worklights, rear Hand throttle control Hydraulic attachment bracket with separate locking system Hydraulic control for 3rd function Hydraulic control for 3rd &amp; 4th functions Instrument/gauges: speedometer/tachometer Light, attachment flood (halogen) Lockable tool box Mud guards Radio mounting kit (includes 2 speakers, antenna &amp; voltage reducers) Retractable seat belt</p>	<p>Secondary steering Sliding window, door Slow moving vehicle emblem Spillguard, bolt-on (not for use on light material buckets) Strainer for fueling Switch, forward/reverse shifting Tire options: 23.5R25 23.5-25(20PR)L-2 23.5-25(16PR)L-3 23.5-25(20PR)L-4 23.5-25(20PR)L5 Working lights, front, extra Working lights, rear, extra</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.

### VME North America

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