VOLVO BM

L 160

Compactor

- ***Engine output:***
  SAE J 1349 Net 185 kW (252 hp)
- ***Operating weight: 27 310 kg (60 210 lb)***
- ***Buckets: 3,4-4,0 m^3 (4,4-5,2 yd^3)***

- *Direct-injected, turbocharged Volvo diesel*
- *Servo-assisted hydraulic system*

For levelling and compacting of waste - built for tough duty

- *Breaks up, moves and compacts the waste*
- *Digs, carries and spreads the cover material*
- *Trapezoidal or knife-shaped pads*
- *Large compactor wheels*

ENGINE

The Volvo TD 102 GB 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. Replaceable safety filter

Make			Volvo	
Model			TD 102 GB	
Output, gross, at	r/s	(r/min)	36,7	(2200)
SAE J1349	kW	(hp)	194	(264)
Flywheel output at	r/s	(r/min)	36,7	(2200)
SAE J1349	kW	(hp)	185	(252)
DIN 70020/6271	kW	(hp)	185	(252)
Max. torque at	r/s	(r/min)	23,3	(1400)
SAE J1349 Gross	Nm	(lbf ft)	980	(723)
SAE J1349 Net	Nm	(lbf ft)	962	(710)
DIN 70020/6271	Nm	(lbf ft)	962	(710)
No. of cylinders			6	
Displacement, total	l	(in^3)	9,6	(586)
Bore	mm	(in)	120,65	(4,75)
Stroke	mm	(in)	140	(5,50)
Compression ratio			15:1	

ELECTRICAL SYSTEM

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

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

Voltage	V	24	
Batteries	V	2x12	
Battery capacity ea.	Ah	140	
Cranking capacity ea.	A	800	
Reserve capacity ea	min	270	
Alternator rating	W/A	1540 / 55	
Starter motor output	kW (hp)	6,6	(9)

STEERING SYSTEM

Articulated steering. Orbitrol steering with boosted flow.

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

System supply: steering system supplied from separate steering pump.

Cylinders: two double-acting cylinders with chromed piston rods.

Steering cylinders			2	
Bore	mm	(in)	110	(4,3)
Piston rod diameter	mm	(in)	50	(2)
Stroke	mm	(in)	423	(16,7)
Working pressure	MPa	(psi)	15	(2175)
Flow volume	l /min		190	
	(US gal/min)			(50)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)

DRIVE TRAIN

Torque converter: single-stage

Transmission: Volvo BM power shift transmission of countershaft type withdirectional clutch modulation. Three speeds forward and three reverse. Single lever control.

* Compaction will normally be done operating in 1:st or 2:nd gear at speeds 7-8 km/h (4 to 5 mile/h). Machine travel speeds are theoretical and based on a rolling resistance of 4%. Travel speeds will vary depending on ground conditions and type of compactor wheels.

Axles: fully floating half-shafts with planetary type hub reduction gears. 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 low-friction roller bearings on each planetary gear. The hub reduction gears can be removed without having to remove wheels and brakes.

Torque multiplication			2,7 : 1	
Transmission, make			Volvo BM	
Model			HT 200	
Running speeds				
forward/reverse				
1	km/h(mile/h)		7,1	(4,4)
2	km/h(mile/h)		13,2	(8,2)
3	km/h(mile/h)		25,2	(15,7)
Front axle, make			Volvo BM	
Model			AH 70 A	
Rear axle, make			Volvo BM	
Model			AH 70 D	
Oscillating movement				
total	± °		15	
Vertical wheel travel	mm	(in)	600	(23,5)

WHEELS

Chopper wheels, Order No			91058	
Drum width	mm	(ft in)	850	(2'9")
Drum diameter	mm	(ft in)	1400	(4'7")
Pad height	mm	(ft in)	168	(6,6")
Number of pads			24	
Chopper wheels, Order No			90034	
Drum width	mm	(ft in)	750	(2'6")
Drum diameter	mm	(ft in)	1400	(4'7")
Pad height	mm	(ft in)	168	(6,6")
Number of pads			20	
Trapezoidal pads, Order No			91062	
Drum width	mm	(ft in)	850	(2'9")
Drum diameter	mm	(ft in)	1400	(4'7")
Pad height	mm	(ft in)	135	(5,3")
Number of pads			48	
Cleaners, Order No			91061	
Trapezoidal pads, Order No			90035	
Drum width	mm	(ft in)	750	(2'6")
Drum diameter	mm	(ft in)	1400	(4'7")
Pad height	mm	(ft in)	135	(5,3")
Number of pads			48	
Cleaners, Order No			90319	

BRAKE SYSTEM

The brake system meets requirements according to SAE J1152, EG 71/320 and ISO 3450.

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

Secondary system: dual-circuit system, divided between axles. The central warning light flashes for low system pressure in any circuit and the monitoring light for the circuit with inadequate pressure comes on.

Parking brake: enclosed wet multi-disc brake built into transmission. A spring-loaded application. Hydraulic release with a control on left of operator. A warning lamp indicates when the parking brake is applied and ignition is turned on. The central warning light flashes when gear lever is in forward or reverse while the parking brake is engaged.

Brake friction area				
front/wheel ea.	cm^2	(in^2)	810	(126)
rear/wheel ea.	cm^2	(in^2)	810	(126)
Reservoirs			3	
volume, total	l	(in^3)	50	(3050)
Parking brake area, total	cm^2	(in^2)	1547	(240)

CAB

Tested and approved as safety cab according to the Swedish Working Environment Act section 3, subsection 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 with seat belt and heater.

Emergency exits			3	
Ventilation	m^3/min	(cfm)	10	(353)
Heating capacity	kW	(Btu/h)	11,6	(39600)
Operator's seat			ISRI 6000/575	

SERVICE REFILL CAPACITIES

Crankcase	l	(US gal)	31	(8,2)
Fuel tank	l	(US gal)	340	(89,8)
Cooling system	l	(US gal)	70	(18,5)
Transmission, total	l	(US gal)	47	(12,4)
Front axle, total	l	(US gal)	45	(11,9)
Rear axle, total	l	(US gal)	56	(14,8)
Hydraulic system	l	(US gal)	320	(84,5)
Hydraulic tank	l	(US gal)	230	(60,8)

HYDRAULIC SYSTEM

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

Pump: a triple-pump (vane pumps) fitted to a power take-off on transmission.

System supply: system supplied from two separate pumps, one large (pump 1) and one small (pump 2). Only the large pump operates when the system pressure exceeds 17 MPa (2465 psi). The pilot system is supplied from a separate pilot pump.

Valve: double-acting 3 section valve. The control valve is governed by a 3-section servo valve.

Lifting function: the valve has four positions: lifting, neutral, lowering and floating. Disengageable electro-magnetic boom kick-out and ground positioner. Adjustable for all positions between maximum reach and full lifting height as well as ground position.

Tilting function: the valve has three positions: rollback, neutral and forward tilting. Disengageable electro-magnetic bucket positioner adjustable for all desired loading angles.

Cylinders: double-acting. Boom-tilt cylinders are slightly shorter than the standard L160 loader cylinders for improved protection. Dump heigt is also reduced from the standard L160 loader.

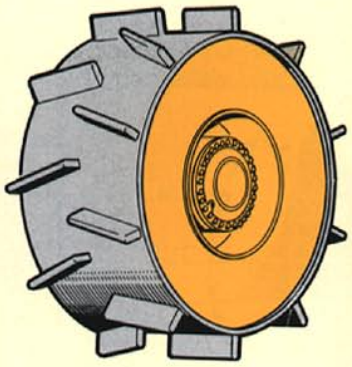
Filter: full-flow filtering through 10 µm filter cartridge in combination with magnetic core.

Oil cooler: as standard.

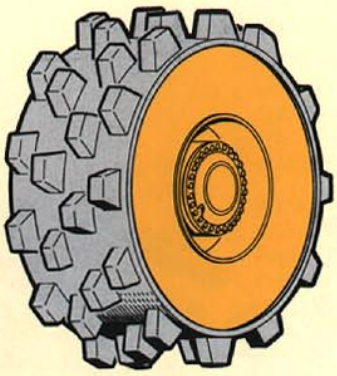
Load unit: hydraulic cylinders fitted in line with lifting arms.

Main pump 1				
Working pressure	MPa	(psi)	20	(3045)
Flow volume	l/min		250	
	(US gal/min)			(66)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Main pump 2				
Working pressure	MPa	(psi)	17	(2465)
Flow volume	l/min		140	
	(US gal/min)			(37)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Pilot pump				
Working pressure	MPa	(psi)	4,0	(580)
Lifting cylinder			2	
Bore	mm	(in)	160	(6,3)
Piston rod diameter	mm	(in)	80	(3,1)
Stroke	mm	(in)	940	(37,0)
Tilting cylinder			2	
Bore	mm	(in)	140	(5,5)
Piston rod diameter	mm	(in)	70	(2,8)
Stroke	mm	(in)	983	(38,7)
Lifting time (with load, SAE)	s		5,9	
Tipping time (with load,SAE)	s		1,9	
Lowering time (empty)	s		3,1	
Total cycle time	s		10,9	

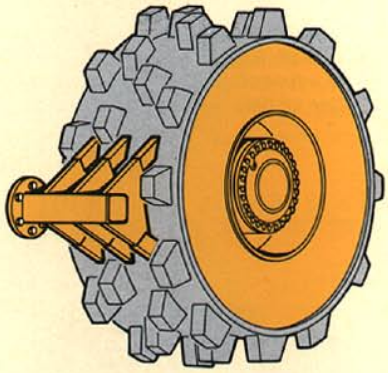
GROUND PRESSURE



Chopper wheel



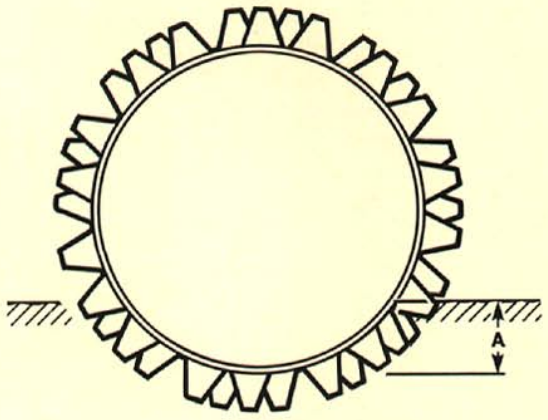
Trapezoidal pads



Cleaners for trapezoidal pads

		General purpose bucket				Multi-purpose bucket			
		Chopper wheels		Trapezoidal wheels and cleaners		Chopper wheels		Trapezoidal wheels and cleaners	
Ground pressure area	cm^2	5400	6130	5400	6130	5400	6130	5400	6130
	$(in)^2$	(837)	(950)	(837)	(950)	(837)	(950)	(837)	(950)
Drum width	mm	750	850	750	850	750	850	750	850
	(in)	(29,5)	(33,5)	(29,5)	(33,5)	(29,5)	(33,5)	(29,5)	(33,5)
Ground pressure									
Front *	kp/cm^2	1,15	1,06	1,19	1,07	1,12	1,03	1,16	1,05
	(psi)	(16,3)	(15,0)	(16,9)	(15,2)	(16,0)	(14,7)	(16,6)	(14,9)
Rear *	kp/cm^2	1,30	1,19	1,34	1,20	1,32	1,21	1,36	(1,22
	(psi)	(18,5)	(17,0)	(19,1)	(17,1)	(18,7)	(17,2)	(19,3)	(17,3)
Pounds per linear inch	PLI	494	453	511	458	492	452	509	457

* Wheels sinking into surface. A = 100 mm (4")



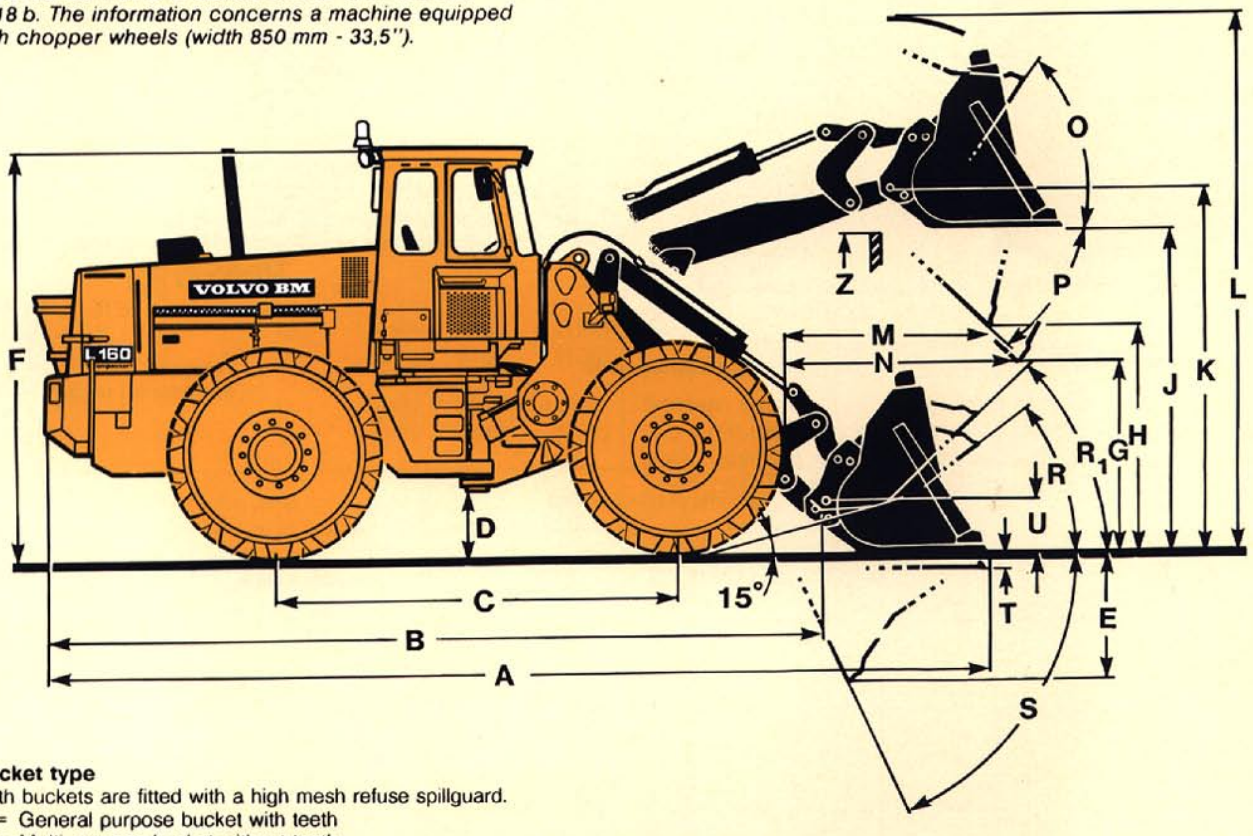
The Volvo BM method of calculating the ground pressure of a compactor in this case involves deducing the projected wheel drum area against the ground at various depths of penetration into the surface, and relating the result to the axle loading of that wheel.

ALTERATION OF DIMENSIONAL DATA

		Chopper wheels	Trapezoidal wheels and cleaners	
		750 mm (29,5")	750 mm (29,5")	850 mm (33,5")
Width over wheels	mm (in)	-200 (-7,9)	-200 (-7,9)	- -
Ground clearance	mm (in)	- -	-35 (-1,4)	-35 (-1,4)
Operating weight	kg (lb)	-1120 (-2470)	-220 (-485)	+ 300 + (660)

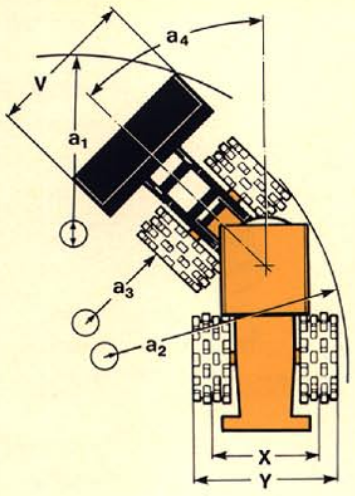
DIMENSIONAL DATA VOLVO BM L160 Compactor

Where applicable specifications and dimensions are in accordance with SAE Standard J732 c, J742 b and J818 b. The information concerns a machine equipped with chopper wheels (width 850 mm - 33,5").



Bucket type
Both buckets are fitted with a high mesh refuse spillguard.
1 = General purpose bucket with teeth
2 = Multi-purpose bucket without teeth
D = Pin-On

Order No.			91032		SP44-14Mk2A***	
Mounting / Bucket type			D / 1		D / 2	
Volume, heaped	m^3	(yd^3)	4,0	(5,2)	3,4	(4,5)
Breakout force	kN	(lbf)	145,7	(32740)	151,2	(33970)
A	mm	(ft in)	8420	(27'7")	8160	(26'9")
B	mm	(ft in)	6790	(22'4")	6790	(22'4")
C	mm	(ft in)	3550	(11'8")	3350	(11'8")
D	mm	(ft in)	540	(1'9")	540	(1'9")
E	mm	(ft in)	1070	(3'6")	1070	(3'6")
F*	mm	(ft in)	3570	(11'9")	3570	(11'9")
G	mm	(ft in)	2000	(6'7")	2000	(6'7")
H	mm	(ft in)	2490	(8'2")	2690	(8'10")
J	mm	(ft in)	3660	(12'0")	3640	(11'11")
K	mm	(ft in)	3950	(12'11")	3950	(12'11")
L	mm	(ft in)	5760	(18'11")	5440	(17'10")
M	mm	(ft in)	1590	(5'2")	1560	(5'1")
N	mm	(ft in)	1900	(6'3")	1870	(6'2")
O	°		53		53	
P	°		45		45	
R	°		43		43	
R_1*	°		44		44	
S	°		66		66	
T****	mm	(ft in)	110	(4")	80	(3")
U	mm	(ft in)	460	(1'6")	460	(1'6")
V	mm	(ft in)	3400	(11'2")	3440	(11'2")
X	mm	(ft in)	2430	(8'0")	2430	(8'0")
Y	mm	(ft in)	3280	(10'9")	3280	(10'9")
Z	mm	(ft in)	3650	(11'11")	3650	(11'11")
a_1 clearance circle over bucket	mm	(ft in)	7570	(24'10")	7500	(24'7")
a_2	mm	(ft in)	6950	(22'9")	6950	(22'9")
a_3	mm	(ft in)	3670	(12'1")	3670	(12'1")
a_4	± °		37		37	
Weight distribution						
front	kg	(lb)	12950	(28550)	12680	(27950)
rear	kg	(lb)	14610	(32210)	14790	(32610)
Operating weight	kg	(lb)	27560	(60760)	27470	(60560)



* Carrying position SAE
** Also available with bolt on teeth
*** Above ground level

STANDARD EQUIPMENT

Safety and comfort
ROPS- and FOPS-tested cab
Cab heater with fresh air intakes provided with filters and defroster
Ergonomically designed and adjustable driving seat with seat belt
Safety glass
Tinted glass
Rear-view mirrors, external, two
Rear-view mirrors, internal one
Lighting:
- main headlamps, full- and dipped-beam (asymmetrical, halogen)
- parking lights
- sidelights
- brake lights
- rear lights
- cab lighting
- instrument lighting
- direction indicators

Sideways planedamper
Rotating beacon with collapsible mounting
Instrument panel with symbols
Sun visor
Safety start
Hazard warning flashers
Windscreen wipers, front and rear windows
Windscreen washer, front/rea
Horn
Outlet for tyre inflation
Ash tray
Lighter
Lifting eyes
Underbody protection plates
Protection plates
Tool kit

Engine & electrical system
Socket, 24 VAlternator
Battery disconnection switch
Tell-tale lamps for:
- front and rear working lights charging
- full-beam headlights
- direction indicator flashers
- engine oil pressure
- transmission oil pressure
- differential lock
- parking brake
- brake pressure
- hazard warning flashers
- air cleaner

Air cleaner with ejector emptying
Engine temperature gauge
Hydraulic transmission temperature gauge
Pressure gauge for brake system
Fuel gauge
Hour recorder
Engine heater, electric
Preheating coil
Suction fan
Rain cap for exhaust pipe

For certain markets only
Central warning lamp for following functions: engine oil pressure, brake pressure, engine temperature, transmission temperature, transmission oil pressure.

Drivetrain
Power Shift transmission
Differential lock (front axle)
Single-lever gear control
Interlock for 4th speed

Hydraulic system
Vane pump
Control valve (three sections)
Bucket position indicator
Boom kick-out
Bucket positioner
Hydraulic oil cooler

OPTIONAL EQUIPMENT *(Standard equipment on certain markets)*

Engine equipment
Extra fuel filter
Cyclon-precleaner

Electrical equipment
Inspection lamp
Back-up alarm
Central warning

Cab equipment
Air-conditioner
Radio panel without radio
Heated driving seat
Working lights, front (two), halogen
Working lights, rear (four), halogen

Storage box in cab
Dual brake pedals
Wheel nut wrench
Pivoting steering wheel
Vent-window
Instructor's seat
Intermittent wiper

Hydraulical equipment
3rd hydraulic function
Load lowering equipment

Protective equipment
Protecting guards for rear working lights

Other equipment
Air horn

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