

VOLVO BM

L 160

High-lift



- **Engine output:**
SAE J1349 Net 185 kW (252 hp)
- **Operating weight:** 23,9 t (52 820 lb)
- **Grapples:** 0,2-3,9 m² (2,2-42,0 ft²)

Effective, economical timber handling

- Quick and effective loading and unloading
- Higher stacks
- More efficient turnover of the stored timber

Productivity-boosting features

- Pilot operated dual-circuit hydraulic system
- High-lift lift-arm system with long reach
- Rotating grapple, 360°
- Wide selection of grapples
- Direct-injected, turbocharged Volvo diesel
- Volvo BM Automatic Power Shift (opt)
- Precision steering

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 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 Net	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	(5,5)
Compression ratio			15:1	

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, transmission oil pressure.

Voltage	V	24	
Batteries	V	2x12	
Battery capacity	Ah	2x140	
Cranking capacity	A	2x800	
Reserve capacity	min	2x270	
Alternator rating	W / A	1540 / 55	
Starter motor output	kW (hp)	6,6	(9)

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)

DRIVE TRAIN



Torque converter: single-stage, single-phase.

Transmission: Volvo BM power shift transmission of countershaft type with directional clutch modulation. Four speeds forward and four reverse. Single lever control.

Axes: fully floating half-shafts with planetary type hub reduction gears. One-piece axle housing of casted steel. Rigid front axle and oscillating rear axle.

Differential: 100% differential lock on front axle. Engagement and disengagement by means of switch on cab floor.

Hub reduction: Volvo BM manufacture with 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			2,69 : 1	
Transmission, make			Volvo BM	
Model			HT 200	
Running speeds				
forward/reverse				
1	km/h (mile/h)	7,3	(4,5)	
2	km/h (mile/h)	13,5	(8,4)	
3	km/h (mile/h)	26,7	(16,6)	
4	km/h (mile/h)	39,9	(24,8)	
Measurement with tires			26.5 - 25	
Front axle, make			Volvo BM	
Model			AH 70 A	
Rear axle, make			Volvo BM	
Model			AH 70 D	
Oscillation movement	°	15		
	mm (in)	600	(23,5)	
Tires			26.5-25 (20PR) L-3	

BRAKE SYSTEM



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

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

Secondary system: dual-circuit system, divided between axles.

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 gear lever is in forward or reverse.

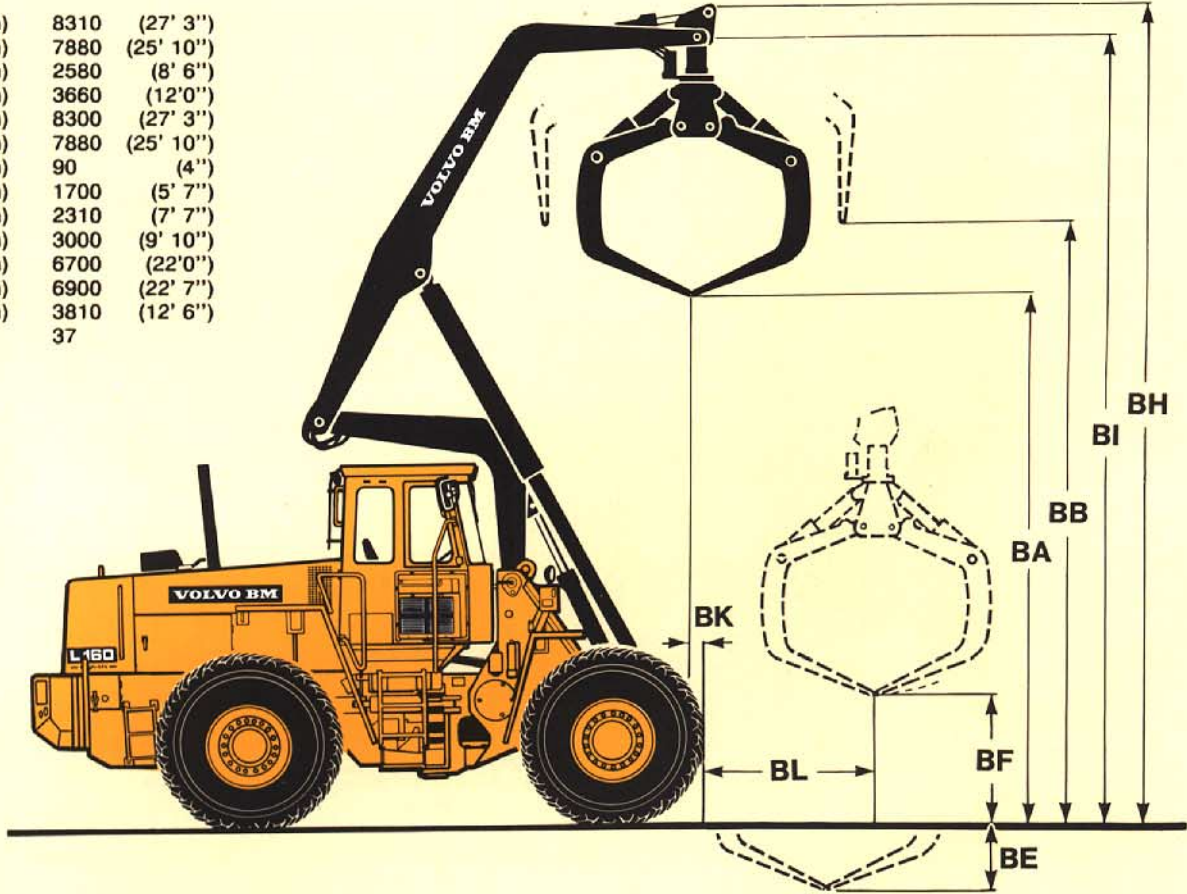
Brake friction area				
front/wheel ea.	cm ² (in ²)	810	(126)	
rear/wheel ea.	cm ² (in ²)	810	(126)	
Reservoirs			3	
volume, total	l (in ³)	47,1	(2870)	
Parking brake area, total	cm ² (in ²)	1547	(240)	

DIMENSIONAL DATA L160 HIGH-LIFT

Tires: 26.5 R 25⁺ XRA L3

Specifications and dimensions apply to a machine equipped with 75% CaCl₂ in the rear tires 1530 kg (3373 lb) and 775 kg (1708 lb) extra counterweight.

H	mm (ft in)	8310	(27' 3")
I	mm (ft in)	7880	(25' 10")
K	mm (ft in)	2580	(8' 6")
L	mm (ft in)	3660	(12' 0")
BH	mm (ft in)	8300	(27' 3")
BI	mm (ft in)	7880	(25' 10")
BK	mm (ft in)	90	(4")
BL	mm (ft in)	1700	(5' 7")
X	mm (ft in)	2310	(7' 7")
Y	mm (ft in)	3000	(9' 10")
a ₁	mm (ft in)	6700	(22' 0")
a ₂	mm (ft in)	6900	(22' 7")
a ₃	mm (ft in)	3810	(12' 6")
a ₄	± °	37	



*) With grapple in position for max. reach

See Alternate Equipment for grapple selection.

		3,9	3,25	2,25	0,2-2,25	0,2-2,8
Grip area	m ²	3,9	3,25	2,25	0,2-2,25	0,2-2,8
	(ft ²)	(42)	(35)	(24)	(2,2-24)	(2,2-30)
Log length	m	2	3	4,5-4,8	-15	-10
	(ft in)	(6'7")	(9'10")	(14'9"-15'9")	(-50')	(-33')
Density	kg/m ³	560	560	550	500	500
	(lb/yd ³)	(950)	(950)	(930)	(850)	(850)
Machine weight	kg	23960	23910	23740	23990	24050
Static tipping load	kg	8900	8950	9100	8850	8800
straight *)	(lb)	(19580)	(19690)	(20020)	(19470)	(19400)
full turn *)	kg	8010	8060	8230	7980	7900
	(lb)	(17620)	(17730)	(18100)	(17500)	(17420)
Operating load	kg	5450	5500	5650	5400	5300
	(lb)	(11990)	(12100)	(12430)	(11880)	(11680)
A	mm	4700	5020	5320	5320	5250
	(in)	(185)	(198)	(209)	(209)	(207)
B	mm	5680	5860	6020	6020	5950
	(in)	(224)	(231)	(237)	(237)	(234)
C	mm	4100	3500	3050	3050	3450
	(in)	(161)	(138)	(120)	(120)	(136)
D	mm	3180	2860	2560	2560	2630
	(in)	(125)	(112)	(101)	(101)	(104)
E	mm	1480	1150	850	850	920
	(in)	(58)	(45)	(33)	(33)	(36)
F	mm	1530	1850	2150	2150	2080
	(in)	(60)	(73)	(84)	(84)	(82)
G	mm	900	900	900	1150	1150
	(in)	(35)	(35)	(35)	(45)	(45)
BA	mm	4700	5020	5320	5320	5250
	(in)	(185)	(198)	(209)	(209)	(207)
BB	mm	5680	5860	6020	6020	5950
	(in)	(224)	(231)	(237)	(237)	(234)
BE	mm	1290	960	660	660	730
	(in)	(51)	(38)	(26)	(26)	(29)
BF	mm	715	1050	1340	1340	1270
	(in)	(28)	(41)	(53)	(53)	(50)

STEERING SYSTEM



Articulated steering. Orbitrol steering with boosted flow.

Pump: vane pump 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)
Relief pressure	MPa	(psi)	15	(2175)
Flow	l/min		190	
		(US gal/min)		(50)
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, subsection 8, and meets standards according to ISO 3471-1980, ROPS (SAE J1040C), ISO 3449-1980 FOPS (SAE J231) and 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. Pressurized cab.

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

Emergency exits			3	
Noise in cab				
max (ISO 6396)	dB (A)		81	
Ventilation	m ³ /min	(cfm)	10	(353)
Heating capacity	kW	(Btu/h)	11,6	(39600)
Operator's seat			ISRI 6000/575	

HYDRAULIC SYSTEM



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

Pump: Pump 1: Dual vane pump fitted to a power take-off on transmission. Pump 2: Vane pump (mounted with steering pump) fitted to a power take-off on transmission.

System supply: Pump 1: for operation of lift, tilt and grip. Pump 2: for operation of load leveling and rotation.

Valve: Two pilot-operated actuating valves. Valve 1 serves: Lift, tilt and grip cylinders. Valve 2 serves: Rotator and load leveling cylinder.

Filter: full-flow filtering through 10 µm filter cartridge (2 connected in parallel) in combination with magnetic core.

Pump 1				
Relief pressure	MPa	(psi)	17,0	(2465)
Flow	l/min		335	
		(US gal/min)		(87,2)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Pump 2				
Relief pressure	MPa	(psi)	15,0	(2175)
Flow	l/min		55	
		(US gal/min)		(13,7)
at	MPa	(psi)	10	(1450)
and engine speed	r/s	(r/min)	36,7	(2200)
Lifting cylinder			2	
Bore	mm	(in)	125	(4,9)
Piston rod diameter	mm	(in)	90	(3,5)
Stroke	mm	(in)	2070	(81,4)
Tilting cylinder			2	
Bore	mm	(in)	140	(5,5)
Piston rod diameter	mm	(in)	70	(2,75)
Stroke	mm	(in)	600	(23,6)
Grapple,				
load leveling cylinder				
Bore	mm	(in)	100	(3,9)
Piston rod diameter	mm	(in)	50	(2)
Stroke	mm	(in)	640	(25,2)
Grip cylinder			2	
Bore	mm	(in)	125	(4,9)
Piston rod diameter	mm	(in)	60	(2,4)
Stroke	mm	(in)	410	(16,1)
Lifting time without load	s		8	
Lowering time without load	s		4,5	
Forward tilt	s		2,5	
Backward tilt	s		3	
Grip, close	s		2,2	
Grip, open	s		2,4	

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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
working lights, front, (two), halogen
working lights, rear, (two), halogen

sidelights
brake lights
rear lights
cab lighting
instrument lighting
Instrument panel with symbols
Sun visor
Safety start
Hazard warning flashers
Windscreen wipers, front and rear windows
Horn
Outlet for tyre inflation
Ash tray
Lighter
Lifting eyes
Automatic lube system
Extra counterweight
Protection guards for front and rear window

Engine & electrical system

Socket, 24 V
Alternator
Battery disconnection switch
Tell-tale lamps for:
front and rear working lights
charging
full-beam headlights
direction indicator flashers
engine oil pressure
differential lock
parking brake
brake pressure
hazard warning flashers
air cleaner
Engine temperature gauge
Air cleaner with ejector emptying
Pressure gauge for brake system
Hydraulic transmission temperature gauge
Fuel gauge
Hour recorder

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 shift control
Tires 26,5-25/20

Hydraulic system

Vane pumps for steering and work hydraulics
Hydraulic oil cooler

OPTIONAL EQUIPMENT

Service and maintenance equipment

Tool kit
Wheel nut wrench
Tire inflation kit

Engine equipment

Low emission version
High altitude version
Pre-cleaner, oil-bath type
Extra fuel filter
Suction fan
Coolant filter
Engine heater, electric
Preheating coil

Electrical equipment

Work-dependent parking lights
Back-up alarm
Working lights, front, extra (two), halogen
Working lights, rear, extra (two), halogen
Attachment lights
Rotating beacon with collapsible mounting

Transmission equipment

Automatic Power-Shift (APS)
Interlock for 4th speed

Cab equipment

Air-conditioner
Tilttable steering wheel
Storage box in cab
Dual brake pedals
Speedometer
Instructor's seat
Sliding window, tinted glass
Radio panel without radio
Heated driving seat
Windscreen washer, front/rear

Protective equipment

Protecting guards for headlamps
Protecting guards for rear working lights

Lift cylinder guard
Silencer guard
Vandalism protection kit
Anti skid tape
Rain cap for exhaust pipe

External equipment

Drawbar with pin
Slow Moving Vehicle sign

Other equipment

Secondary steering
Air horn
Comfort Drive Control

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 BM Company

S-63185 ESKILSTUNA SWEDEN

