

VOLVO BM

L 160

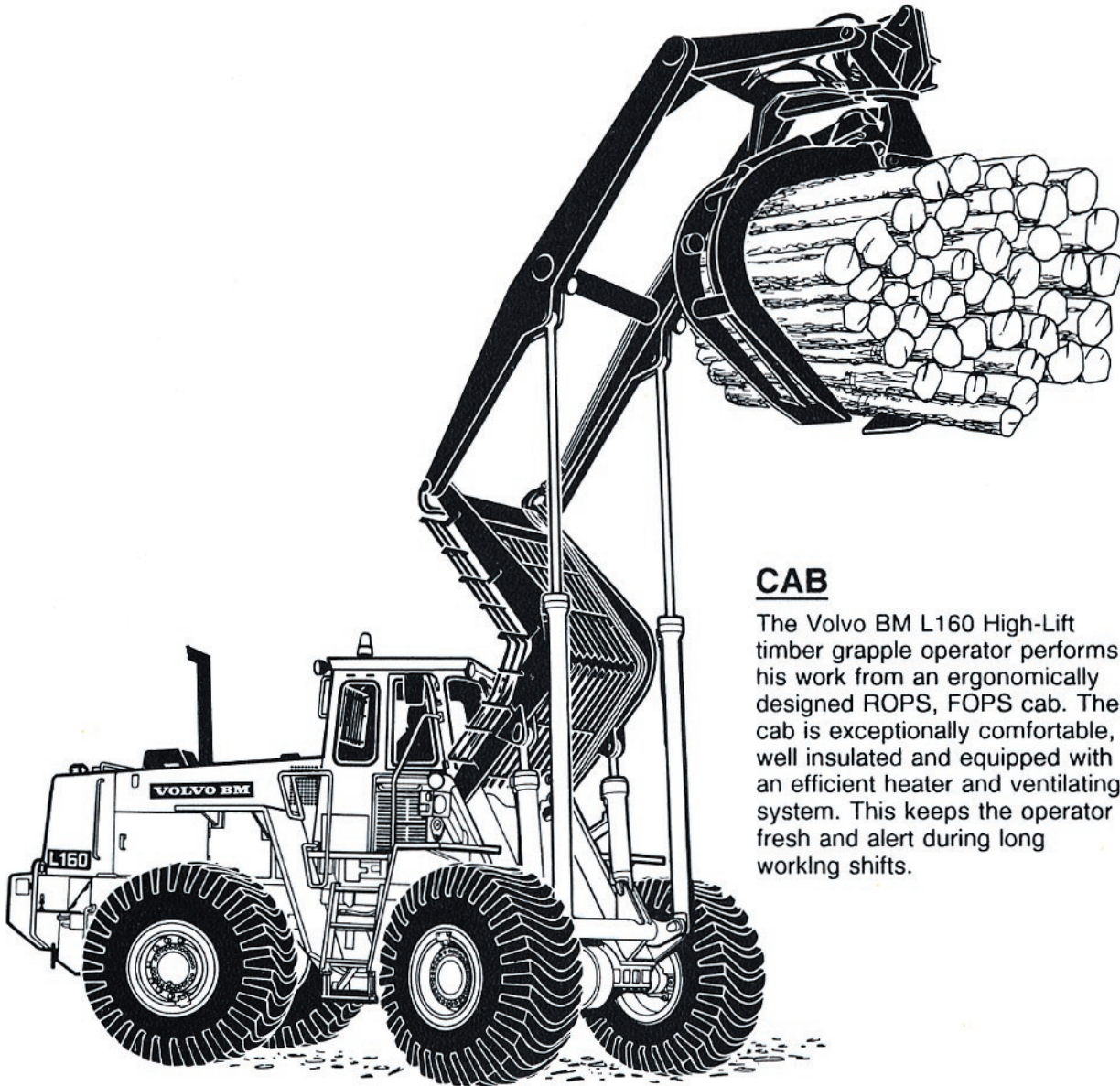
High-lift



VOLVO BM L 160 HIGH-LIFT GRAPPLE - FOR PULPWOOD AND TIMBER

The Volvo BM L160 High-Lift Grapple is easy to operate with a powerful lift-arm system, rotating grapple, and articulated

steering, that permits fast loading and stacking in cramped and difficult operating conditions.



CAB

The Volvo BM L160 High-Lift timber grapple operator performs his work from an ergonomically designed ROPS, FOPS cab. The cab is exceptionally comfortable, well insulated and equipped with an efficient heater and ventilating system. This keeps the operator fresh and alert during long working shifts.

POWER & ENGINEERING

Volvo BM L160 High-Lift is equipped with Volvo BM components manufactured to very high standards. High engineering design standards plus stringent production quality control, are your assurance to total satisfaction.

In order to achieve good overall economy and maximum machine utilization, a great deal of effort has been devoted to component coordination and extension of service intervals. This results in a reliable, efficient, economical high capacity machine.

AUTOMATIC POWER SHIFT

The Volvo BM L160 High-Lift timber grapple is equipped with a Volvo BM Automatic Power Shift transmission. A specially programmed computer automatically selects the most suitable gear precisely at the right time in all working conditions.

This results in optimum efficiency and economy. In addition, the system reduces wear and tear on components and contributes to lower fuel consumption.



ENGINE

The Volvo TD 101 G 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 101 G	
Output, gross, at	r/s (r/min)	36,7 (2200)	
SAE J 1349	kW (hp)	194 (264)	
Flywheel output at	r/s (r/min)	36,7 (2200)	
SAE J 1349 Net	kW (hp)	185 (252)	
DIN 70020/6271	kW (hp)	185 (252)	
Max. torque at	r/s (r/min)	23,3 (1400)	
SAE J 1349 Gross	Nm (lbf ft)	980 (723)	
SAE J 1349 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: Central warning lamp for following functions: engine oil pressure, brake pressure, parking brake, engine temperature, transmission temperature, transmission oil pressure.

Voltage	V	24	
Batteries	no / V	2 / 12	
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)	



SERVICE REFILL CAPACITIES

Crankcase	l (US gal)	29 (7,7)	
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)	39 (10,3)	
Rear axle, total	l (US gal)	49 (12,9)	
Hydraulic system	l (US gal)	320 (84,5)	
Hydraulic tank	l (US gal)	230 (60,8)	



DRIVETRAIN

Torque converter: single-stage

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

Axes: 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.

Tires: Alternate tires are available for different working operations.

Torque multiplication		2,69 : 1	
Transmission, make		Volvo BM	
Model		HT 200	
Running speeds			
1, forward/reverse	km/h (mile/h)	7,3 (4,5)	
2, forward/reverse	km/h (mile/h)	13,5 (8,4)	
3, forward/reverse	km/h (mile/h)	26,7 (16,6)	
4, forward/reverse	km/h (mile/h)	39,9 (24,6)	
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, total	°	15	
Vertical wheel travel	mm (in)	600 (23,5)	
Standard tires		26.5-25 (20PR) L-3	



BRAKE SYSTEM

The brake system meets requirements according to SAE J 1152, 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.

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



STEERING SYSTEM

Articulated steering. Orbitrol steering with boosted flow.

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

System supply: steering system supplied from front section of pump.

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

Steering cylinders, number			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 (US gal /min)	190 (50)		
at and engine speed	MPa (psi) r/s (r/min)	10 (1450) 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 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	



HYDRAULIC SYSTEM

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

Pump: Pump 1: Twin vane pump (for operation of lift, tilt and grip). Pump 2: Double gear pump (for operation of load leveling, rotation and servo hydraulics)

Valve: Two servo-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 micron filter cartridge (2 connected in parallel) in combination with magnetic core.

Pump 1				
Working pressure	MPa (psi)	17,0 (2465)		
Flow volume	l/min (US gal /min)	330 (87,2)		
at and engine speed	MPa (psi) r/s (r/min)	10 (1450) 36,7 (2200)		
Pump 2				
Working pressure	MPa (psi)	14,0 (2030)		
Flow volume	l/min (US gal /min)	52 (13,7)		
at and engine speed	MPa (psi) r/s (r/min)	10 (1450) 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			2	
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	5		
Forward tilt	s	2,5		
Backward tilt	s	3,5		
Grip, close	s	2,2		
Grip, open	s	2,4		

ALTERNATE EQUIPMENT*

(for further information please contact your local dealer)

Rotator				Tires
Cross-beam				Michelin XRDNA 26,5-25*
Cross-beam with 350 mm (13,8 in) lowered grapple mount				Bridgestone R-lug 26,5-25/20
Grapple arms with clinch chain	3,9 m ²	(42 ft ²)		Firestone SRG 26,5-25/20
Grapple arms for forest waste, sugar cane and bamboo	3,9 m ²	(42 ft ²)		Goodyear 26,5-25/20 SHRL L-3
Grapple arms with clinch chain	3,25 m ²	(35 ft ²)		
Grapple arms with clinch chain	2,8 m ²	(30 ft ²)		
Grapple arms with hydraulic holding arms	2,8 m ²	(30 ft ²)		
Grapple arms with clinch chain	2,25 m ²	(24 ft ²)		
Grapple arms with hydraulic holding arms	0,2-2,25 m ²	(0,2-24 ft ²)		
Guards for piston rods				

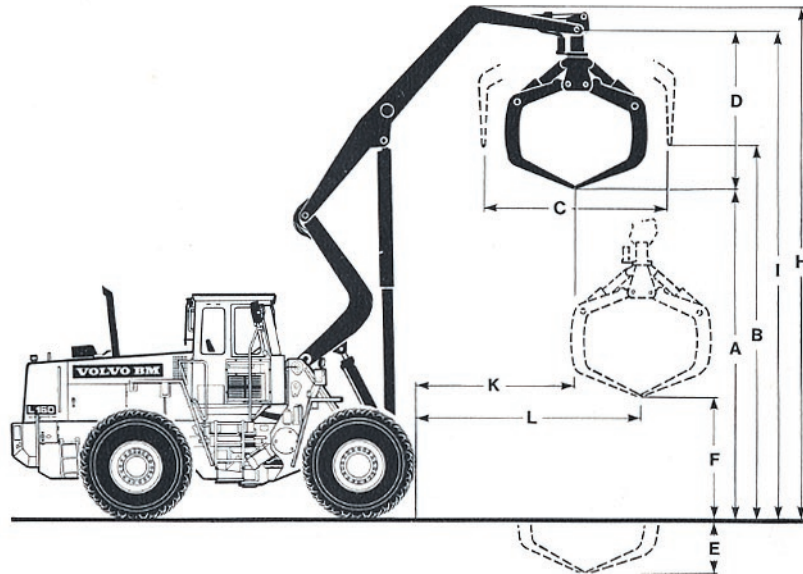
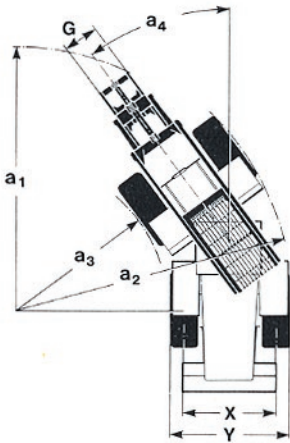
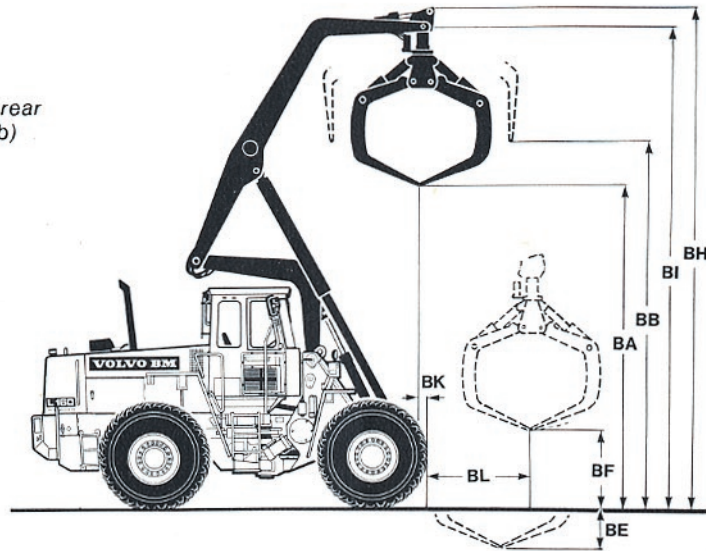
* Standard equipped machine does not include grapple, cross-beam or rotator.

DIMENSIONAL DATA

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	



See Alternate Equipment for grapple selection.

		3,9	3,25	2,25	0,2-2,25	0,2-2,8
Grip area	m ² (ft ²)	3,9 (42)	3,25 (35)	2,25 (24)	0,2-2,25 (2,2-24)	0,2-2,8 (2,2-30)
Log length	m (ft in)	2 (6'7")	3 (9'10")	4,5-4,8 (14'9"-15'9")	-15 (-50')	-10 (-33')
Density	kg/m ³ (lb/yd ³)	560 (950)	560 (950)	550 (930)	500 (850)	500 (850)
Machine weight	kg (lb)	23960 (52700)	23910 (52600)	23740 (52200)	23990 (52700)	24050 (52900)
Static tipping load *						
straight	kg (lb)	8900 (19580)	8950 (19690)	9100 (20020)	8850 (19470)	8800 (19400)
full turn	kg (lb)	8010 (17620)	8060 (17730)	8230 (18100)	7980 (17500)	7900 (17420)
Operating load	kg (lb)	5450 (11990)	5500 (12100)	5650 (12430)	5400 (11880)	5300 (11680)
A	mm (in)	4700 (183)	5020 (196)	5320 (209)	5320 (209)	5250 (207)
B	mm (in)	5680 (221)	5860 (228)	6020 (234)	6020 (234)	5950 (234)
C	mm (in)	4100 (160)	3500 (136)	3050 (119)	3050 (119)	3450 (136)
D	mm (in)	3180 (124)	2860 (111)	2560 (100)	2560 (100)	2630 (104)
E	mm (in)	1480 (58)	1150 (45)	850 (33)	850 (33)	920 (36)
F	mm (in)	1530 (60)	1850 (72)	2150 (84)	2150 (84)	2080 (82)
G	mm (in)	900 (35)	900 (35)	900 (35)	1150 (45)	1150 (45)
BA	mm (in)	4700 (183)	5020 (196)	5320 (207)	5320 (207)	5250 (207)
BB	mm (in)	5680 (222)	5860 (229)	6020 (235)	6020 (235)	5950 (234)
BE	mm (in)	1290 (50)	960 (37)	660 (26)	660 (26)	730 (29)
BF	mm (in)	715 (28)	1050 (41)	1340 (52)	1340 (52)	1270 (50)

STANDARD EQUIPMENT

Safety and comfort

ROPS- and FOPS-tested cab
Cab heater with fresh air intakes provided with filters and defroster
Air-conditioner
Ergonomically designed and adjustable driving seat with seat belt
Heated driving seat
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, front, extra (two), halogen
working lights, rear (two), halogen
working lights, rear, extra (two), halogen
attachment lights
sidelights
brake lights
rear lights
cab lighting
instrument lighting
direction indicators

Rotating beacon with collapsible mounting
Storage box in cab
Instrument panel with symbols
Sun visor
Safety start
Hazard warning flashers
Windscreen wipers, front and rear windows
Intermittent wiper, front
Windscreen washer, front/rear
Horn
Outlet for tyre inflation
Ash tray
Lighter
Drawbar with pin
Lifting eyes
Automatic lube system
Extra counterweight
Underbody protection plates
Protection plates
Dual brake pedals
Slow Moving Vehicle sign
Anti skid tape
Protection guards for front and rear window
Tool kit
Wheel nut wrench
Tyre inflation kit

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
Air cleaner with ejector emptying
Engine temperature gauge
Hydraulic transmission temperature gauge
Alternator
Fuel gauge
Hour recorder
Engine heater, electric
Preheating coil
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

Automatic Power-Shift (APS)
Power Shift transmission
Differential lock (front axle)
Single-lever gear control
Tyres 26,5-25/20

Hydraulic system

Double pump - Vane pumps for steering and work hydraulics
Hydraulic oil cooler

OPTIONAL EQUIPMENT *(Standard equipment on certain markets)*

Engine equipment

Low emission version
High altitude version
Pre-cleaner, oil-bath type
Extra fuel filter
Suction fan
Coolant filter

Electrical equipment

Work-dependent parking lights
Back-up alarm

Transmission equipment

Interlock for 4th speed

Cab equipment

Speedometer
Instructor's seat
Sliding window, tinted glass
Radio panel without radio

Protective equipment

Protecting guards for headlamps
Protecting guards for rear working lights
Lift cylinder guard
Silencer guard
Vandalism protection kit

Other equipment

Secondary steering
Air horn (el)
Boom lowering system
Log pusher

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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