

**4600 B**

**VOLVO BM**



# **VOLVO BM 4600 —A HIGH CAPAC FOR THE REALL**

For the fast, effective, high volume handling of heavy materials, the Volvo BM 4600 B is the economic answer. You have at your command, a precisely engineered power-pack composed of carefully matched, smoothly interacting components. The Volvo Turbo diesel engine, transmission and the loader unit's hydraulics, all work in total harmony to give you the penetration and breakout force demanded when the going gets really tough. The Volvo BM 4600 B is a 21 tonner with bucket volumes of 3.8–13 m<sup>3</sup> (5–17 yd<sup>3</sup>) and an engine developing 185 kW (252 hp) DIN. The operator's environment is really superb. From the comfortable cab, you have light, positive, fingertip control over all loader unit movements and steering, plus good allround visibility. This allows you to work with effortless precision in all applications.

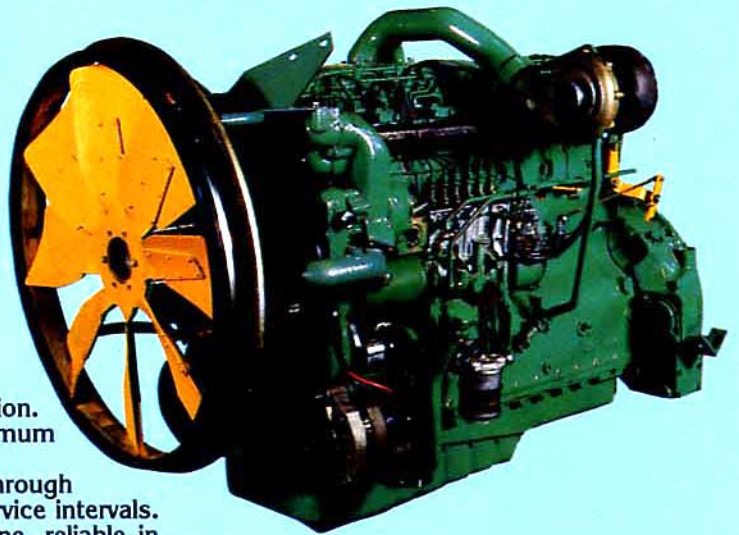


# **D B ITY LOADER Y BIG JOBS**



# **POWER & ENGINEERING**

The drive train is made up of Volvo BM components manufactured to a very high technical specification. The highest standards of design engineering plus stringent production and quality control, are your guarantee of total satisfaction. In order to achieve good overall economy and maximum machine utilisation, a good deal of effort has been devoted to reducing parts stocking requirements through component co-ordination and the extension of service intervals. All this gives you an efficient, economical machine, reliable in every detail.



# **LOADER UNIT**



The Volvo BM 4600 B has a rugged loader unit ideal for hard production work. The liftarms and linkage geometry have been designed to provide in abundance, the three qualities essential for a good production loader: superior breakout forces throughout the full lift radius, excellent lifting height and good reach. These qualities enable the 4600 B to dump into tall bins and load high sided vehicles with ease. At the end of the rollback movement, the bucket accelerates onto a mechanical stop, moving the heap of a well filled bucket to the rear. This refinement reduces spillage and increases machine stability.

## **Right attachment**

Using the correct attachment for the material or load to be handled, boosts capacity and profitability. The 4600 B has therefore been equipped with a wide range of quality, purpose-designed attachments well matched to the machine and their tasks. If the machine is to be used on a variety of applications requiring frequent attachment changes, the 4600 B can be fitted with a hydraulic attachment bracket, enabling you to re-equip your machine for an entirely different job in under a minute.

# CAB

A machine can be no more efficient than the person who is operating it. Therefore the operator and his work environment warrants special attention. A 4600 B operator works in a very safe ROPS and FOPS tested cab. It is exceptionally comfortable, well insulated and equipped with an efficient heating and ventilation system to keep him fresh throughout a long working shift. Ergonomics engineers, following theoretical studies, have drawn up general guidelines for the design and location of controls and instruments. Practical tests have then been carried out to fine-tune the perfect operator environment.

## **Optional: Automatic Power Shift**

Volvo BM is always in the forefront of technological progress. The Volvo BM loader is available with **AUTOMATIC POWER SHIFT** as an optional extra. A specially programmed computer selects the appropriate gear for every situation. The operator works more effectively increasing the machine's capacity and improving fuel economy.



# CAPACITY



*The 4600 B has the power for hard work, combined with nimble manoeuvrability and ample lifting height and reach. These are ideal characteristics for unloading large volumes of material.*

*Volvo BM's loader unit offers good breakout forces in all positions—even at the top. This is a vital feature for working in timber and pulpwood terminals, for example.*

*The 4600 B also has a high capacity for carrying over long distances. The machine's long wheelbase and good weight distribution provide a stable ride with high average speeds.*





## ENGINE

Volvo TD 101 G 6-cylinder, in-line, direct-injected, turbo-charged 4-stroke diesel engine with wet replaceable cylinder linings.

Flywheel rating	185 kW at 36.7 rps DIN 70020 (252 hp at 2 200 rpm DIN)
Gross rating	194 kW at 36.7 rps SAE J 270 (264 hp at 2 200 rpm SAE)
Max. torque	962 Nm at 23.3 rps DIN 70020 (710 lbf ft at 1 400 rpm DIN) 980 Nm at 23.3 rps SAE J 270 (723 lbf ft at 1 400 rpm SAE)
No. of cylinders	6
Bore	120.65 mm (4.75 in)
Stroke	140 mm (5.5 in)
Displacement	9.6 litres (586 in <sup>3</sup> )
Compression ratio	15:1
Air cleaning in three stages	1. Cyclone precleaner with exhaust ejector 2. Paper filter 3. Catch-all safety filter



## ELECTRICAL SYSTEM

Batteries	2 × 12 V (connected in series)
Voltage	24 V
Battery capacity	140 Ah
Alternator	1,540 W (55 A)
Starter motor	6.6 kW (9 hp)
Central warning lamp for following functions:	

*(For certain markets only)*  
Engine oil pressure. Brake pressure. Parking brake. Engine temperature. Transmission temperature. Transmission oil pressure.



## TORQUE CONVERTER

Type	Single-stage
Torque, multiplication ratio	2.69:1

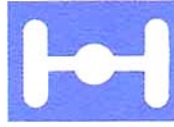


## TRANSMISSION

Type: Power-shift  
Designation: VOLVO BM HT 200

Number of gears forward/reverse 4/4

Speeds:	1. 0–7 km/h (0–4.3 mph) (0–1.9 m/s)
(tyres 26.5–25)	2. 0–14 km/h (0–8.7 mph) (0–3.9 m/s)
	3. 0–27.5 km/h (0–17.0 mph) (0–7.7 m/s)
	4. 0–40 km/h (0–25.0 mph) (0–11.1 m/s)



## AXLES

Fully floating axle shafts with planetary hub reductions.

Front axle:	Designation	Volvo BM AH 70 A
	Differential lock	100% lock-up (dog clutch)
Rear axle:	Designation	Volvo BM AH 70 D
	Oscillation	±15° (500 mm = 20 in)



## BRAKE SYSTEM

Service brakes: Air over hydraulic operated disc brakes, dual system

Brake area:	Front	792 cm <sup>2</sup> (123 in <sup>2</sup> )/wheel
	Rear	792 cm <sup>2</sup> (123 in <sup>2</sup> )/wheel
Air reservoir volume	2 × 20 litres + 1 × 10 litres (2 × 4.4 UK gal + 1 × 2.2 UK gal)	
Parking brake	Encapsulated wet multiple-plate brake built into transmission	
Parking brake area:	1 547 cm <sup>2</sup> (240 in <sup>2</sup> )	



## TYRES

26.5R25\*

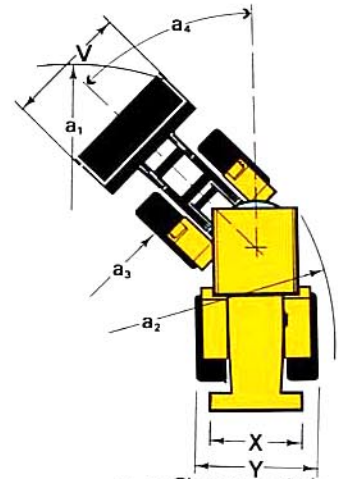
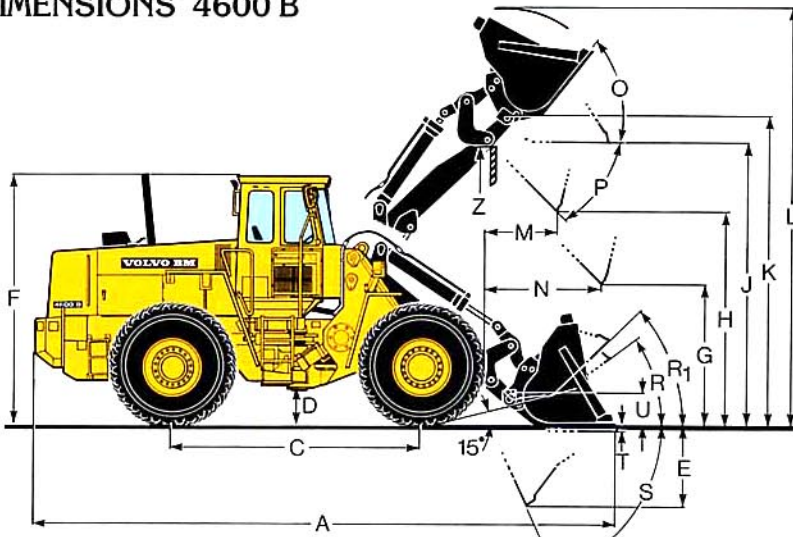


## STEERING

Orbitrol steering with flow amplification

Steering angle	±37°
Lock-to-lock turns of wheel	4.3
Steering cylinder, bore/stroke	110/423 mm (4.3/16.7 in)
Piston rod diameter	50 mm (2.0 in)
Oil pump, type	Vane pump
Output at 10 MPa (1 450 psi) and 2 200 rpm (36.7 rps)	190 l/min (41.8 UK gal/min)
Relief pressure	14 MPa (2 030 psi)

# DIMENSIONS 4600 B



A = See table below  
 A = 6 700 mm (22') with-  
 out attachment  
 C = 3 550 mm (11'8")  
 D = 470 mm (1'7")  
 E = 1 220 mm (4')  
 F = 3 500 mm (11'6")

G = 2 000 (6'7")  
 H = See table below  
 J = 4 120 mm (13'6")  
 K = 4 405 mm (14'5")  
 L = See table below  
 M = See table below  
 N = See table below

O = 55°  
 P = 45°  
 R = 38°  
 R<sub>1</sub> = 44° Carry position  
 S = 66°  
 T = 90 mm (4")  
 U = 415 mm (1'2")

V = See table below  
 X = 2 310 mm (7'7")  
 Y = 3 000 mm (9'10")  
 Z = 4 000 mm (13'2")

a<sub>1</sub> = Clearance circle, see table below  
 a<sub>2</sub> = Turning radius 6 900 mm (22'7")  
 a<sub>3</sub> = Inner radius 3 810 mm (12'6")  
 a<sub>4</sub> = Steering angle ±37°

Attachment		Bucket pin on	Bucket hook on	Bucket pin on	Bucket pin on
Capacity	m <sup>3</sup> (yd <sup>3</sup> )	3.8 (5)	3.8 (5)	4.2 (5.5)	4.5 (6)
Density	kg/m <sup>3</sup> (lb/yd <sup>3</sup> )	1 800 (3 033)	1 800 (3 033)	1 600 (2 596)	1 500 (2 528)
(H) Dump clearance at full lift and 45° discharge	mm (ft in)	3 200 (10'6")	3 100 (10'2")	3 200 (10'6")	3 080 (10'1")
(M) Reach at full lift and 45° discharge	mm (ft in)	1 150 (3'9")	1 250 (4'1")	1 150 (3'9")	1 280 (4'2")
(N) Reach at 45° discharge and 7 ft high	mm (ft in)	1 880 (6'2")	1 940 (6'4")	1 880 (6'2")	1 970 (6'6")
(A) Overall length	mm (ft in)	8 200 (26'11")	8 350 (27'5")	8 200 (26'11")	8 380 (27'6")
(L) Overall height with attachment	mm (ft in)	5 860 (19'3")	5 900 (19'4")	5 980 (19'7")	6 000 (19'8")
(a <sub>1</sub> ) Clearance circle	mm (ft in)	14 900 (48'10")	15 000 (49'2")	14 900 (48'10")	15 060 (49'5")
(V) Width (over bucket)	mm (ft in)	3 200 (10'6")	3 200 (10'6")	3 200 (10'6")	3 200 (10'6")
Breakout force	kgf (lbf)	15 800 (34 832)	14 200 (31 305)	15 800 (34 832)	14 000 (30 864)
Static tipping load, straight	kg (lb)	15 300 (33 730)	14 200 (31 305)	15 250 (33 620)	15 200 (33 510)
Static tipping load, 35° turn	kg (lb)	13 970 (30 798)	13 100 (28 880)	13 900 (30 644)	13 850 (30 534)
Static tipping load at full turn	kg (lb)	13 800 (30 423)	12 900 (28 439)	13 750 (30 314)	13 700 (30 203)
Operating load at full turn	kg (lb)	6 900 (15 212)	6 450 (14 220)	6 865 (15 137)	6 850 (15 101)
Hydraulic lifting force at ground level	kgf (lbf)	23 500 (51 808)	22 600 (49 824)	23 500 (51 808)	23 200 (51 146)
Hydraulic lifting force at max. height	kgf (lbf)	10 500 (23 148)	10 200 (22 487)	10 500 (23 148)	10 400 (22 928)
Operating weight	kg (lb)	21 100 (46 517)	21 400 (47 178)	21 200 (46 737)	21 250 (46 848)
Weight distribution front	kg (lb)	9 600 (21 164)	10 050 (22 156)	9 750 (21 495)	9 800 (21 605)
Weight distribution rear	kg (lb)	11 500 (25 353)	11 350 (25 022)	11 450 (25 243)	11 450 (25 243)

Specifications are based on a machine equipped with a 3.8 m<sup>3</sup> (5 yd<sup>3</sup>) straight pin-on bucket without teeth and 26.5R25\* tyres. Wherever applicable, specifications are in accordance with SAE Standard J 732 c, J 742 b and J 818 b.

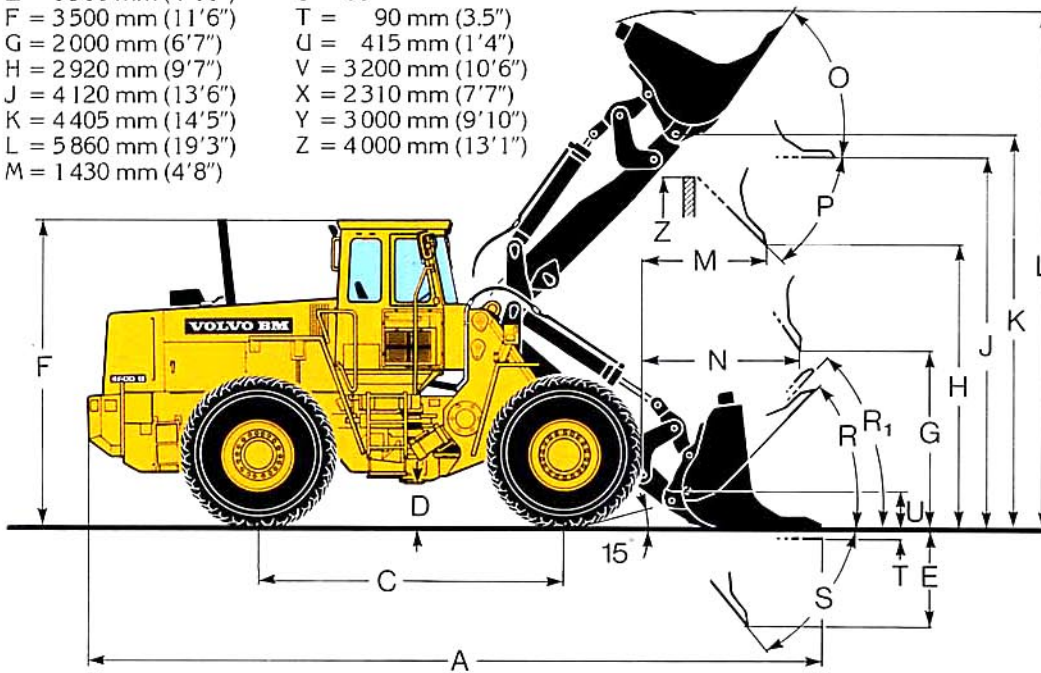
CaCl<sub>2</sub> in rear tyres is only recommended for stabilizing purposes in log grapple handling on hard and flat ground.

Alternative tyres or CaCl <sub>2</sub> filling	Change in Basic data Operating weight kg (lb)	Change in static tipping load at full turn kg (lb)	
		Pin on	Hook on
75 % CaCl <sub>2</sub> in rear tyres 26.5-25/20	+ 1 530 (+ 3 373)	+ 2 070 (+ 4 564)	+ 1 820 (+ 4 012)

## DIMENSIONS WITH TRUNCATED BUCKET WITH TEETH

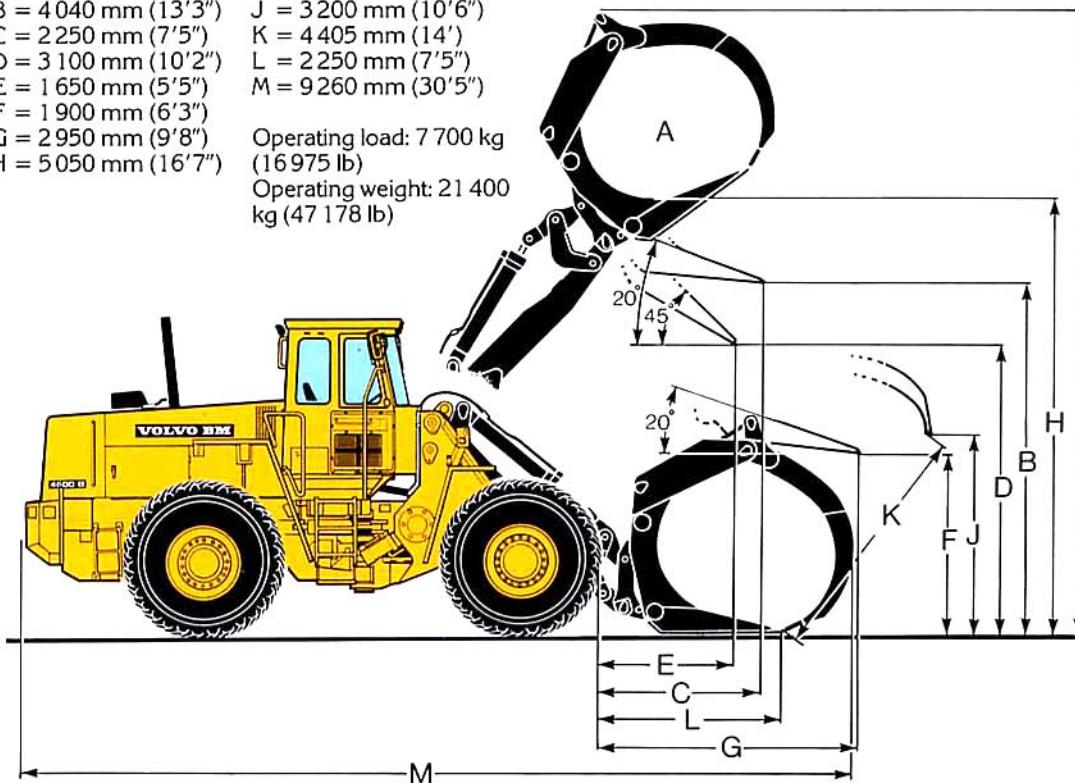
(Pin-on bucket 98934)

A = 8465 (27'9")	N = 2160 mm (7'1")
A = 6700 mm (22'10") without attachment	O = 55°
C = 3550 mm (11'8")	P = 45°
D = 470 mm (1'7")	R = 38°
E = 1500 mm (4'11")	R <sub>1</sub> = 44° Carry position
F = 3500 mm (11'6")	S = 66°
G = 2000 mm (6'7")	T = 90 mm (3.5")
H = 2920 mm (9'7")	U = 415 mm (1'4")
J = 4120 mm (13'6")	V = 3200 mm (10'6")
K = 4405 mm (14'5")	X = 2310 mm (7'7")
L = 5860 mm (19'3")	Y = 3000 mm (9'10")
M = 1430 mm (4'8")	Z = 4000 mm (13'1")



## DIMENSIONS WITH SORTING GRAPPLE (99999)

A = 3.1 m <sup>2</sup> (33 ft <sup>2</sup> )	I = 7400 mm (24'3")
B = 4040 mm (13'3")	J = 3200 mm (10'6")
C = 2250 mm (7'5")	K = 4405 mm (14')
D = 3100 mm (10'2")	L = 2250 mm (7'5")
E = 1650 mm (5'5")	M = 9260 mm (30'5")
F = 1900 mm (6'3")	Operating load: 7700 kg
G = 2950 mm (9'8")	(16975 lb)
H = 5050 mm (16'7")	Operating weight: 21400
	kg (47178 lb)







## HYDRAULIC SYSTEM

Pump, type (working hydraulics):  
Vane pump

Output at 10 MPa  
(1 450 psi) and  
36.7 rps (2 200 rpm)

380 l/min (83.6 UK  
gal/min)

Relief pressure

17 MPa (2 465 psi)

### Oil filter:

Full-flow filtration through filter cartridge with magnetic core.

### Hydraulic cylinders:

Lift-bore/stroke

170/1 107 mm  
(6.7/43.6 in)

Piston rod diameter

80 mm (3.1 in)

Tilt-bore/stroke

140/983 mm  
(5.5/38.7 in)

Piston rod diameter

70 mm (2.8 in)

### Loader unit:

Control valve: Double-acting 3-spool valve. Lift function has hold position for lift, tilt and float. Automatic control of lift and tilt functions with cut-out as standard. The control valve is operated by a servo valve.

Raise with SAE workload

7.8 s

Lower, without load

4.1 s

Dump

4.0 s



## SERVICE REFILL CAPACITIES

	Litres	UK gal	US gal
Crankcase	31	6.8	8.2
Fuel tank	360	79.2	95.1
Cooling system	50	11	13.2
Hydraulic system, total	300	66	79.3
Hydraulic tank	230	50.6	60.8
Transmission and torque converter, total	45	9.9	11.9
Front axle differential and hubs	45	9.9	11.9
Rear axle differential and hubs	56	12.3	14.8



## CAB

Tested and approved as a safety cab in accordance with Article 3 Section 8 of the Swedish Environment Protection Act and

meets ISO 3471-1980, ROPS (SS783), ISO 3449-1980 FOPS (SS872) and SS/ISO 6055 "Overhead guards for lift-truck". The cab is mounted on 4 rubber pads and is well insulated and weathertight. All windows have bronze-tinted glass. The windshield is of laminated safety glass, all other windows have tempered glass.

Heater and defroster: Heating element with filtered fresh air and 3-speed fan plus defroster for front, rear and side windows.

Operator's seat

ISRI GI 6000/575

Mountings for seat belt

Yes

## OPTIONAL EQUIPMENT

(Standard equipment on certain markets)

- Heating flange
- Electrical equipment Norway
- Protective grilles for front service lights
- Protective grilles for rear working lights
- Vent, bronze-tinted
- Passenger seat
- Extra working lights, front (2) halogen
- Extra working lights, rear (2) halogen
- Working light, attachment (1) halogen
- 3rd hydraulic control
- Return line, 3rd hydraulic control
- 4th and 5th control, electricals
- Extra fuel filter
- Tyre inflation kit
- Hydraulic attachment bracket
- Air conditioning
- Heated operator's seat
- Electric engine block heater
- Rain guard for exhaust pipe
- Industrial hitch
- Wheel nut wrench set
- Tool kit
- Oil immersion pre-cleaner
- Extractor fan
- Electric heating flange
- Lever interlock
- German version
- Road-dependent safety steering
- Air horn
- Reversing alarm
- Rotating beacon with collapsible mount
- Intermittent wiper
- Washers, front and rear windows
- SMV plate
- Dual brake pedals
- Air-operated parking brake
- Radio panel without radio
- Low-emission version
- Underground version
- High-lift version
- Tropical version
- Compactor version
- Exhaust gas cooling
- Automatic Power Shift (APS)

# STANDARD EQUIPMENT



## SAFETY & COMFORT

- ROPS and FOPS cab
- Cab heating with filtered fresh air intake and defroster
- Openable window
- Safety glass, windshield
- Tinted glass
- Ergonomically designed and adjustable operator's seat
- Rear-view mirrors, external, 2
- Rear-view mirrors, internal, 1
- Lights:
  - Headlights
  - High/low/asym. halogen
  - Parking lights
  - Working lights forward (2) halogen
  - Working lights rear (2) halogen
  - Side marker lights
- Brake lights
- Tail lights
- Cab lighting
- Instrument lighting
- Direction indicators
- Mounting for seat belt
- Seat belt
- Binder holder
- Utility box in cab
- Pressure gauge for air brake system
- Instrument panel with symbols
- Sun visor
- Safety start
- Fenders
- Hazard flashers
- Horn
- Tyre inflation outlet
- Ashtray
- Cigarette lighter
- Lifting lugs



## ENGINE & ELECTRICAL SYSTEM

- Fuel gauge
  - Temperature gauge, engine
  - Temperature gauge, hydraulic transmission
  - Hour meter
  - Electrical outlet 24 V
  - Battery disconnect switch
  - Alternator
  - Air cleaner with ejector
  - Pilot lamps for:
    - Working lights front and rear, battery charging, high beam, direction indicators, engine oil pressure, transmission oil pressure, differential lock, parking brake, brake pressure hazard flashers, air cleaner
- For certain markets only
- Central warning lamp:
    - Brake pressure, engine oil pressure, engine temperature, transmission oil pressure, transmission temperature, parking brake



## HYDRAULIC SYSTEM

- Control valve (3-spool). Servo-operated
- Bucket position indicator
- Bucket positioner and boom kick-out
- Vane pumps
- Hydraulic oil cooler
- Automatic lowering



## POWER TRANSMISSION

- Full Power Shift transmission
- Differential lock (front axle)
- Transmission cut-out valve
- Single-lever control
- Tyres 26.5R25\*

# VOLVO BM

VOLVO BM AB ESKILSTUNA SWEDEN

*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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ENGELSKA

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