

861

VOLVO BM



VOLVO BM 80 —RELIABLE A ECONOMICAL

Volvo BM—the world's leading manufacturer of articulated dumptrucks for nearly 20 years.



51 AND L

For a long time now, the Volvo BM 861 has been well established on many world markets. It is renowned for its reliability and its ability to handle difficult hauling duties with good economy, even where haul roads have not been constructed.

That is why it is unquestionably the market leader.

Improvements over the years have progressively increased the machine's production capacity. Driver comfort has also been improved to enable him to exploit the full capabilities of the machine. The Volvo BM 861 has 6 large wheels, articulated steering, a ground-hugging bogie and 4-wheel drive. Collectively, these features make the Volvo BM the strongest contender for a diverse range of off-highway, or a combination of on/off highway hauling duties.

To sum up, the 861 dumptruck gives you:

- Volvo BM capacity
- Volvo BM comfort
- Volvo BM reliability
- Volvo BM component co-ordination
- Volvo BM service availability
- Volvo BM OVERALL ECONOMY



RELIABLE VOLVO BM POWER TRAIN

The Volvo BM 861 is equipped with an in-line 125 kW (170 hp) SAE direct-injected six-cylinder Volvo engine—the most reliable and fuel-efficient type of engine in this horsepower class.

This engine type TD60, of which many thousands have been manufactured, is turbocharged to give a more efficient combustion, higher power and lower fuel consumption than any equivalent conventionally aspirated engine.

Transmission

The Volvo BM Power-Shift gearbox enables the driver to shift smoothly through the full gear range with short movements of the lever. The high/low gear range and 4-wheel drive are operated pneumatically from the same lever. Power is transmitted to the wheels via a power train built from well balanced and perfectly matched Volvo manufactured components to ensure a long trouble-free life for the 861.



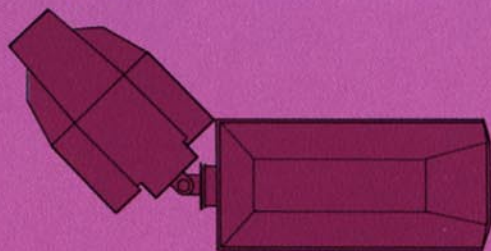
GROUND-HUGGING TERRAIN BOGIE

Fundamental to the huge success of the 861 are the frame joint and the bogie. The cylindrical frame joint allows the tractor unit with front axle to rotate independently of the bogie-borne trailer unit. Therefore, all wheels are able to maintain full ground contact while following terrain undulations.

The Volvo BM bogie has independently suspended axles with high ground clearance to give the body a smooth "floating" ride over rough terrain. The bogie, combined with the articulated steering and powered front axle, make easy work of tipping right over the edge of a dumping site, reducing the need for bulldozers.

Articulated steering

Articulated steering makes the 861 easy to manoeuvre in the confined areas of loading and dumping sites.



COMFORT

If an efficient work rate on off-road hauling is to be maintained, the driver must stay fresh to the end of a long working shift. This demands a cab of the highest standard. The 861 is equipped with such a cab, which has an efficient heating and fresh air system, is well insulated against noise and has a superb seat with a full range of adjustments to suit the driver's height and build.

Safety

The cab is fully tested and approved to ROPS standard and the driver has very good visibility to increase his awareness of all activities on the work site. It is also reassuring for him to know that the 861 has a dual-circuit brake system, particularly when working at speed with heavy loads on downgrades.

Ergonomic controls

All instrumentation and controls are within easy sight and reach. 4-wheel drive, for example, can be engaged on the move by a selector built into the gear lever and differential locks are engaged via easily accessible controls on the instrument panel. Also the hydraulically powered steering has a light, sensitive action.



SERVICE

The Volvo BM 861 is designed from the ground up for easier servicing. This means more productive operating hours and better machine economy for you and greater job satisfaction for your driver.

- Service points conveniently accessible from ground level.
- Easy checking and filling of oil.
- Well-protected batteries, easy to inspect.
- Conveniently located filters.
- Tilt-open engine bonnet gives easy access to engine compartment.





ENGINE

Volvo TD 60B 6-cylinder in-line direct-injected turbo-charged 4-stroke diesel engine with overhead valves and wet, replaceable cylinder linings.

Flywheel rating	107.5 kW at 41.5 rps DIN 70020 (146 hp at 2,500 rpm DIN)
Gross rating	125 kW at 41.5 rps SAE gross J816 (170 hp at 2,500 rpm SAE)
Max. torque	445 Nm at 33.5 rps DIN 70020 (328 lbf ft at 2,000 rpm DIN)
Max. torque, gross	503 Nm at 33.5 rps SAE J816 (371 lbf ft at 2,000 rpm SAE)
No. of cylinders	6
Bore	98.425 mm (3.87 in)
Stroke	120 mm (4.72 in)
Displacement	5.48 l (334 in ³)
Compression ratio	16:1
Cold start	Richer fuel mixture and thermostat
Air filter	Dry air cleaner



BRAKE SYSTEM

Type Dual-circuit brake system
Driving brakes: Front Air-hydraulic
Rear Air-mechanical

Parking brake	Spring-actuated brake on bogie axles
Front axle, type	Disc brakes
Diameter of brake disc	460 mm (18 in)
No. of friction pads/brake	2
Bogie, type	Drum brakes
Make	Drive axle Volvo Trailing axle Volvo
Diameter of brake drum	394 mm (15.5 in) 413 mm (16.3 in)
Friction pads, No. per drum	2 2



TYRES

Front: Rim	13.00-25
Tyre	18.00-25 radial or cross-ply
Rear: Rim	17.00-25
Tyre	20.5-25 radial or cross-ply

Ground pressure: See special table



ELECTRICAL SYSTEM

Voltage	12V
Battery capacity	150 Ah
Alternator	450 W
Starter motor	3 kW (4 hp)



STEERING SYSTEM

Articulated steering with hydrostatic operation of two double-acting hydraulic cylinders.

Max. working pressure	12 MPa (1,700 psi)
Lock-to-lock turns	3.5
End locks	Mechanical
Steering angle from centreline	45°
Lock-to-lock steering time	5.2 s at 25 rps (1,500 rpm)
Steering cylinder, type	Double-acting



TRANSMISSION

Torque converter, type	Single-stage, single-phase with freewheel stator
Torque multiplication ratio	2.5:1
Hydraulically operated gearbox	Power shift
Make	Volvo BM
No. of gears	4/4
Speeds, forward-reverse	1 0-7 km/h (0-4.3 mph) 2 0-12 km/h (0-6.2 mph) 3 0-18 km/h (0-11.2 mph) 4 0-30 km/h (0-18.6 mph)



HYDRAULIC SYSTEM

Pump, type (working hydraulics & steering): Vane pump

Capacity at 41.7 rps (2,500 rpm)	130 l/min (35 US gal/min, 29 UK gal/min)
Working pressure	12 MPa (1,700 psi)
The hydraulic pump is mounted on the right-hand side of the engine and is driven directly from the engine's transmission.	
Ratio engine—hydraulic pump	1:0.8
Filter:	
Suction line	Strainer
Return line	Replaceable paper filter with magnetic core
Refill	Paper filter



AXLES

Tractor unit: integral part of transmission

Trailer (bogie) drive axle:	
Make	Volvo
Type	RAN 3-80
Differential lock	100% lock-up
Trailing bogie axle:	
Stub axles, hub and brake	Mounted on tubular axle
Make	Volvo



TIPPING MECHANISM

Tipping cylinder, type	6-stage single-acting
Tipping angle	70°
Tipping time with load	18 s
Lowering time	18 s
Tipping stop	Mechanical



PNEUMATIC SYSTEM

Displacement	225 cm ³ (13.7 in ³)
Drive	V-Belt
Outlet for tyre inflation	Yes

Pressure regulator:
Relief pressure, max. 0.75 MPa (106 psi)

Compressed air reservoir:	
Tractor unit	6 + 15 litres (1.6 + 4.0 US gal, 1.3 + 3.3 UK gal)
Trailer	30 litres (8.0 US gal, 6.6 UK gal)



FRAMES

The mid-joint permits infinite rotation, eliminating torsional stresses in the framework. This has permitted the use of a rigid rear frame of welded box sections and a front frame of welded channel sections.



SERVICE REFILL CAPACITIES

	Litres	US gal	UK gal
Crankcase, incl. filter	17	4.5	3.7
Fuel tank	280	74.0	61.5
Cooling system	30	8.0	6.6
Hydraulic system	160	42.3	35.0
Hydraulic tank	135	35.7	29.0
Hydraulic transmission	22	5.8	4.8
Hydraulic transmission at oil change	16	4.2	3.5
Differential and final drive, tractor unit	90	23.7	19.8
Reduction gearbox	1.6	0.42	0.35
Leading bogie axle	33	9.2	7.7



CAB

The cab is mounted on rubber pads, insulated and weathertight and has a flat floor with a rubber mat. Tested and approved as a safety cab in accordance with ROPS standards and Swedish tractor regulations F27.

HEATER AND DEFROSTER: Heating element with fresh air heating and 2-speed fan + defroster.

Driver's seat	Bostrom Viking 301 KS
No. of exits	3 (door, roof hatch, windscreen)



WEIGHTS

Working weights (oils, coolant, full fuel tank, driver, standard tyres and standard body).

18.00–25/20.5–25	Front axle	Bogie	Total weight
Working weight kg (lb)	7,290 (16,070)	5,570 (12,280)	12,860 (28,350)
Payload kg (lb)	–	–	18,520 (40,840)
Total weight kg (lb)	10,500 (23,150)	20,880 (46,040)	31,380 (69,190)

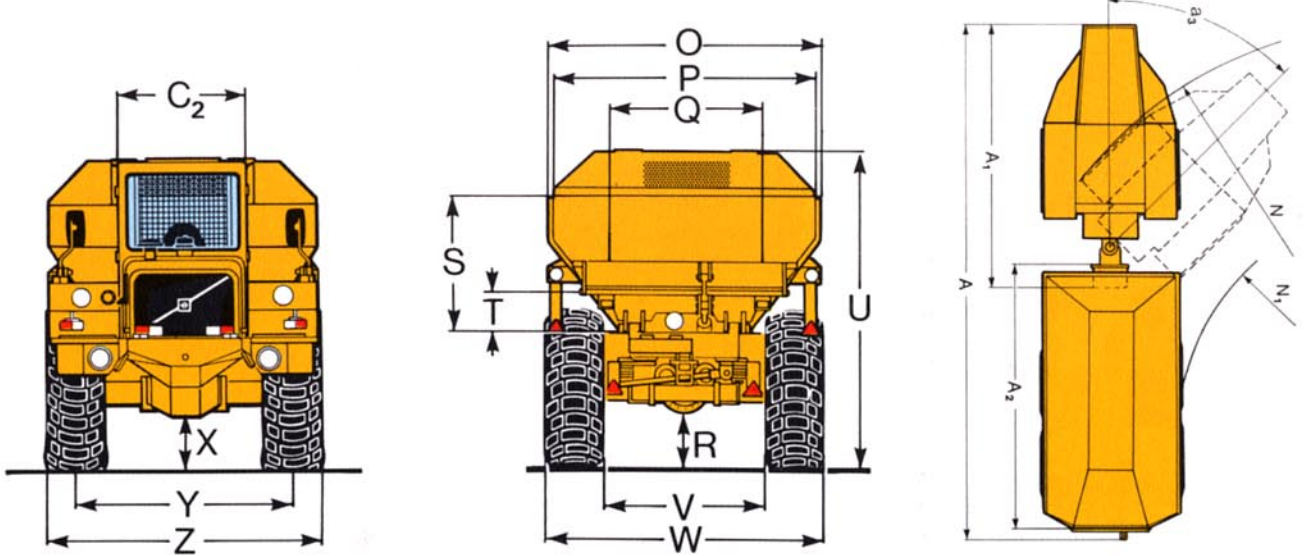
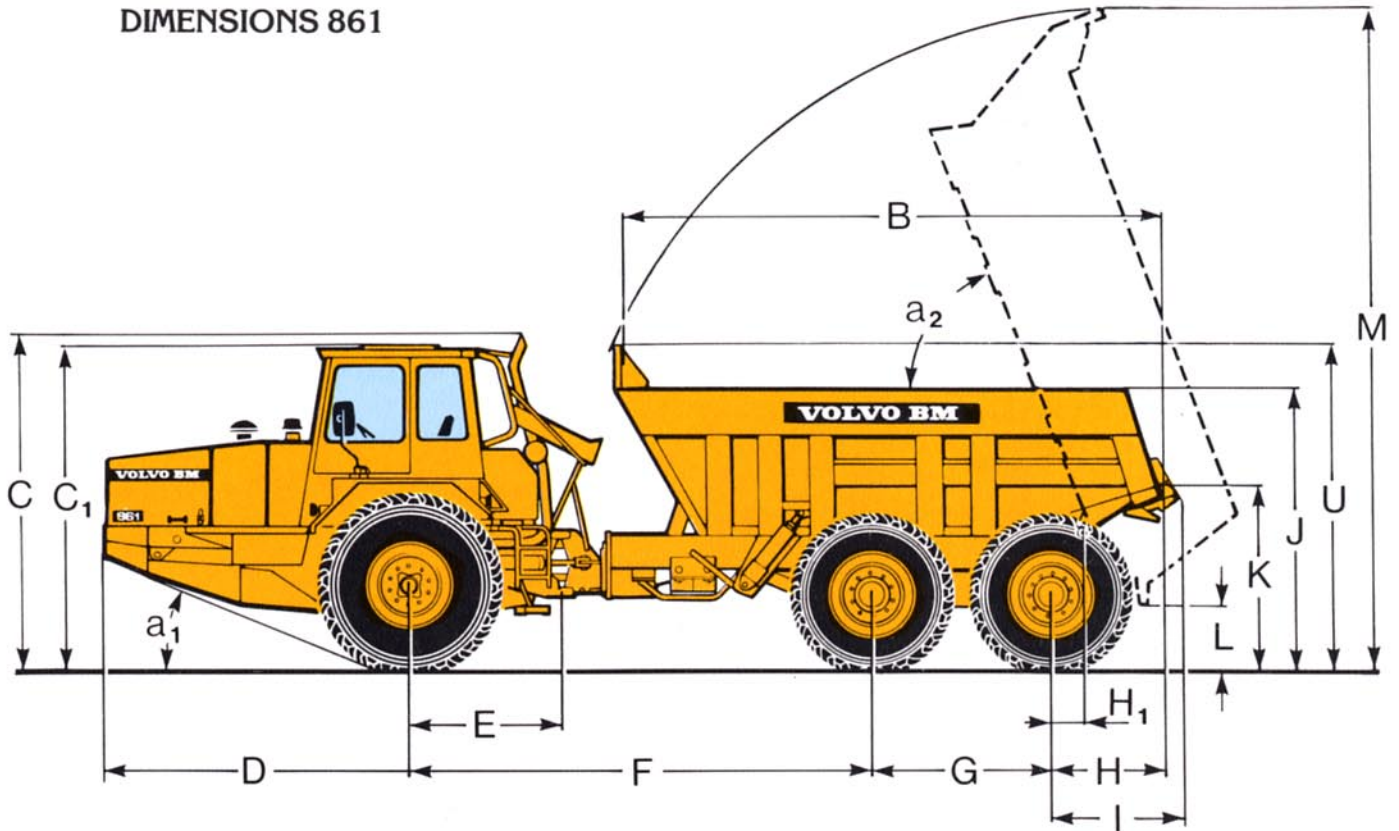


GROUND PRESSURE

At 15 % slump of unladen diameter and weights as above.

	Tyres	Unladen kPa (psi)	Laden kPa (psi)
Front axle	18.00–25 23.5 –25	88 (12.8) 73 (10.6)	132 (19) 109 (15.8)
Bogie	20.5 –25	38 (5.5)	138 (20)
Cone penetrometer value at a depth of 250 mm (9.8 in)	18.00–25 20.5 –25 23.5 –25		61

DIMENSIONS 861



mm (in)	mm (in)	mm (in)	mm (in)
A = 9,400 (370)	F = 4,050 (159)	M = 5,720/5,775*	U = 2,765/2,800*
A ₁ = 4,920 (194)	G = 1,540 (61)	(225/227)*	(109/110)*
A ₂ = 4,700 (185)	H = 1,010 (40)	N = 7,500 (295)	V = 1,940 (76)
B = 4,655 (183)	H ₁ = 425 (17)	N ₁ = 4,100 (162)	W = 2,500 (98)
C = 2,890/2,900	I = 1,090 (43)	O = 2,480 (89)	X = 420/435*
(114/118)	J = 2,450/2,495*	P = 2,380 (94)	(17/17)*
C ₁ = 2,820/2,830*	(96/98)*	Q = 1,490 (59)	Y = 1,960 (77)
(111/111)*	K = 1,585/1,640*	R = 395/430*	Z = 2,500 (98)
C ₂ = 1,360 (55)	(63/65)*	(16/17)*	a ₁ = 21.5°
D = 2,720 (107)	L = 720/775*	S = 1,265 (50)	a ₂ = 70°
E = 1,280 (50)	(28/31)*	T = 380 (15)	a ₃ = 45°

* Unladen machine with tyres 18.00-25/20.5-25



DUMPER BODIES

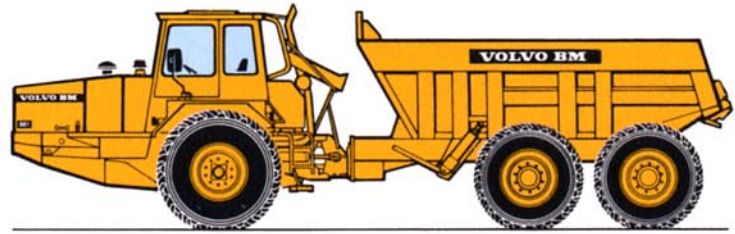
Standard body**

This body is of robust and rugged construction and is designed for the loading and transportation of loose materials. To reduce weight and increase payload capacity, the body is fabricated from hardened steel plate with very high impact strength, even at low temperatures.

The driver's safety and the cab are protected by the headboard which is the same height and width as the cab. A viewing window built into the headboard allows the driver to observe loading operations.

The sides are reinforced and stiffened externally with pressed channel sections.

Body volume, load capacity, body length and loading height have been carefully calculated for efficient filling by any loader or excavator on the market today. A full load of average density material is equivalent in weight to the maximum payload capacity of the vehicle.



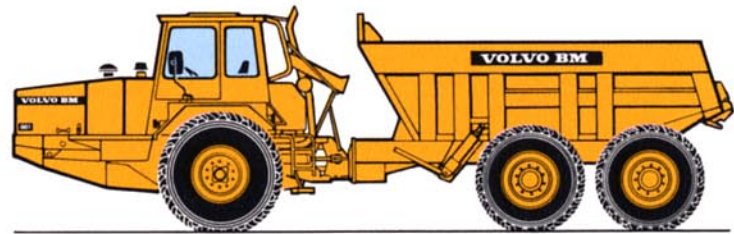
Body volumes (SAE 2:1*)	Without tailgate	With underhung tailgate	With underhung and overhung tailgate
struck, m ³ (yd ³)	8.7 (11.4)	9.0 (11.8)	9.3 (12.2)
heaped, m ³ (yd ³)	11.0 (14.4)	11.5 (15.0)	12.0 (15.7)

** This body cannot be equipped with exhaust heating ducts.

Standard body equipped with wear plates and exhaust gas ducts (weight increase 800 kg = 1,764 lb)

The standard body equipped with wear plates should be used for forced loading of rock or other abrasive material. The wear plates extend the life of bodies used in forced loading and reduce maintenance costs.

The sides and wear plates have a yield strength of 90 kgf/mm² and a hardness of 360–440 HB. The body is prepared for exhaust gas heating through ducts along the bottom.



Body volumes (SAE 2:1*)	Without tailgate	With underhung tailgate	With underhung and overhung tailgate
struck, m ³ (yd ³)	8.7 (11.4)	9.0 (11.8)	9.3 (12.2)
heaped, m ³ (yd ³)	11.0 (14.4)	11.5 (15.0)	12.0 (15.7)

Extended body with wear plates and exhaust gas ducts (weight increase 1,100 kg, 2,426 lb)

This is a 500 mm extension of the body. It makes tipping into mine shafts and bins easier. The body extension partly replaces the tailgate. *Body extension cannot be combined with tailgate.*

The extended body has wear plates of the same high-grade steel as the wear plates on the standard body with a yield strength of 90 kgf/mm² and hardness of 360–440 HB.

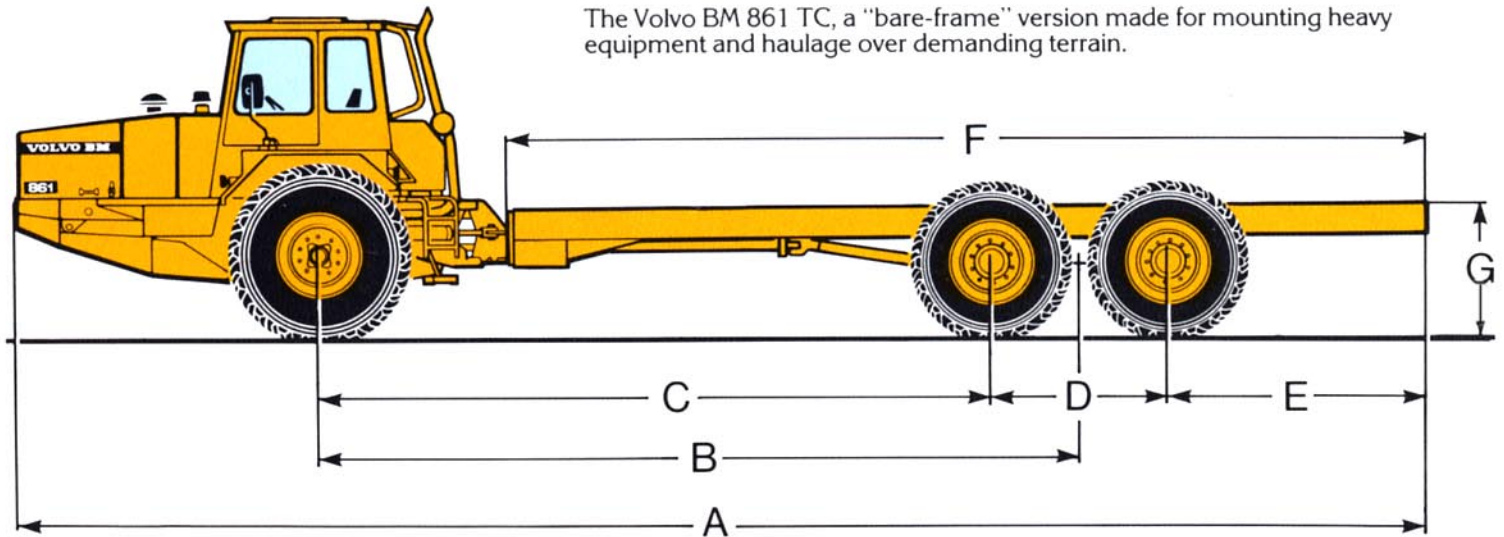
The body is prepared for exhaust gas heating through ducts along the bottom.



Body volumes (SAE 2:1*)			
struck, m ³ (yd ³)	9.8 (12.8)		
heaped, m ³ (yd ³)	12.5 (16.4)		

*) In the case of bodies with struck volumes of less than 10 m³ (13 yd³), heaped volumes are specified to the nearest 0.5 m³. In the case of bodies with struck volumes of 10 m³ (13 yd³) or more, heaped volumes are specified to the nearest whole m³. Struck volume is given in m³ (yd³) to one decimal place.

DIMENSIONAL SPECIFICATIONS TERRAIN CHASSIS 861 TC



	TC 59			TC 40		
Frame length, tractor unit, mm (in):	8,010 (315)			4,145 (163)		
Max. width, front, mm (in):	2,500 (98)			2,500 (98)		
Track front, mm (in):	1,960 (77)			1,960 (77)		
Max. width, rear, mm (in):	2,500 (98) with 20.5×25 tyres			2,500 (98) with 20.5×25 tyres		
Track, rear, mm (in):	1,940 (76) with 20.5×25 tyres			1,940 (76) with 20.5×25 tyres		
Weights:	Tyres 18.00×25/20.5×25			Tyres 18.00×25/20.5×25		
	Front	Rear	Total	Front	Rear	Total
Chassis weight, kg (lb):*	6,840 (15,080)	3,940 (8,685)	10,780 (23,765)	6,740 (14,860)	3,540 (7,805)	10,280 (22,665)
Load incl. superstructure, kg (lb):	3,660 (8,070)	17,460 (38,495)	21,120 (46,560)	3,760 (8,290)	17,860 (39,375)	21,620 (47,665)
Total weight:	10,500 (23,150)	21,400 (47,180)	31,900 (70,325)	10,500 (23,150)	21,400 (47,180)	31,900 (70,330)

DIMENSIONS

A Machine length	12,430/**12,650 (489/**498)	9,200/**9,420 (362/**371)
B	6,630 (261)	4,818 (190)
C	5,910 (233)	4,050 (159)
D	1,600 (63)	1,540 (61)
E Overhang	2,200 (87)	250 (10)
F	8,010 (315)	4,145 (163)
G	1,207 (48)	1,175 (46)
H Frame width	840 (33)	840 (33)

* Chassis weight includes: oil, fuel, water, tools and driver (70 kg).

** Applies with front-mounted hydraulic pump.



UNDERHUNG TAILGATE

The equipment consists of an underhung tailgate with an operating mechanism which automatically opens the tailgate

when the body is tipped.

If the tailgate is subjected to excessively high load, a gas spring is released and the tailgate opens. When the load is relieved, the tailgate closes automatically.

A tailgate should always be used when hauling on a public road in order to prevent spillage.

Underhung tailgate cannot be combined with body extension.

The equipment increases the weight of the body by 100 kg (220 lb).



OVERHUNG TAILGATE

All machines equipped with an underhung tailgate can also be fitted with an upper tailgate which, together with the lower tailgate,

closes off the entire opening on the dumper body. This extra tailgate is intended to be used for hauling gravel, sand and other fluid materials. The design of the tailgate does not permit rocks and boulders to be carried. For such haulage, the tailgate should be removed.

Overhung tailgate cannot be combined with body extension.

The equipment increases the weight of the body by 130 kg (287 lb).

STANDARD VERSION



SAFETY & COMFORT

- ROPS cab
- Heater with fresh air intake and defroster
- Adjustable sprung driver's seat
- Windscreen wipers
- Windscreen washers
- Rear-view mirrors
- Sun visor
- Attachment points for seat belt
- Cigarette lighter
- Ashtray
- Horn
- Complete tyre inflation unit
- Protective grille for rear window
- Hazard flashers
- Cab roof hatch
- Tool kit
- Tinted glass
- Lights: headlights, high/low/asym. parking lights reverse lights direction indicators side marker lights brake lights tail lights cab lighting instrument lighting working lights



ENGINE & ELECTRICAL SYSTEM

- Turbocompressor
- Cold start
- Exhaust gas brake
- Battery disconnect switch
- Electrical outlet
- Preheating coil for induction air, engine
- Compressed air outlet
- Indicator for air cleaner
- Gauges for:
 - brake pressure
 - fuel
 - engine temperature
 - revolutions and hours
- Pilot lamps for:
 - battery charging
 - high beam
 - direction indicators
 - engine oil pressure
 - hydraulic transmission
 - oil pressure
 - parking brake
 - air brakes
 - hazard flashers
 - air cleaner
 - high and low gear
 - hydraulic transmission
 - temperature



BODY EQUIPMENT

- Body with wear plates
- Underhung tailgate



POWER TRANSMISSION

- Torque converter
- Power-shift gearbox
- Differential locks, front and rear
- Tyres, front 18.00–25 radial or cross-ply
- Tyres, rear 20.5–25 radial or cross-ply

OPTIONAL EQUIPMENT

(Standard equipment on certain markets)

- Cab ventilator
- Seat belt
- Air horn
- Rotating warning beacon
- Electric engine heater
- Low-emission version
- ENR equipment
- Collision guard
- Towing shackle
- Headlight washers
- Headlight grilles
- Extra fuel filter
- Towing cable
- Electromagnetic retarder
- Radio
- Towing equipment
- High-altitude version
- 90 amp alternator
- Speedometer
- Collision guard
- Head restraint
- FOPS overhead guard
- Tool kit
- Oil-bath oil cleaner
- Modified exhaust pipe to give clearance for
- snow chains
- Body heating (exhaust gas)
- Extended body
- Elevated body
- Extended and elevated body



VOLVO BM

VOLVO BM AB ESKILSTUNA SWEDEN

Under our policy of continual product improvement, we reserve the right to change specifications and design without notice. The illustrations do not necessarily show the standard version of the machine.

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ENGELSKA

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