

861
=6x6=

VOLVO BM



THE VOLVO BM 8 ... NOW BETTER THAN EVER

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



861 6×6

The 861 has worked on thousands of work sites around the world, on the most difficult ground conditions and in widely varying climates. This machine, because of its efficiency and reliability in off-road hauling, has become recognized as market leader by the construction industry.

Now there is also a Volvo BM 861 6×6. A 6-wheel drive version, intended for applications where ground conditions are at their worst and production stoppages caused by machines bogging down are unacceptable.

The machine's basic design remains the same, with six large wheels, articulated steering and a

bogie design that permits full ground contact even on extremely uneven terrain. Negotiability is greatly improved with the Volvo BM 861 6×6. Besides being able to go practically anywhere and get the job done, regardless of site conditions, the 861 6×6 is also highly reliable — as proved by its forerunners.

The driver operates the machine from a safe, functional cab, enabling him to operate effectively throughout long working shifts. The new Volvo BM 6×6 enables you to transport bulk materials economically and reliably under truly adverse conditions.



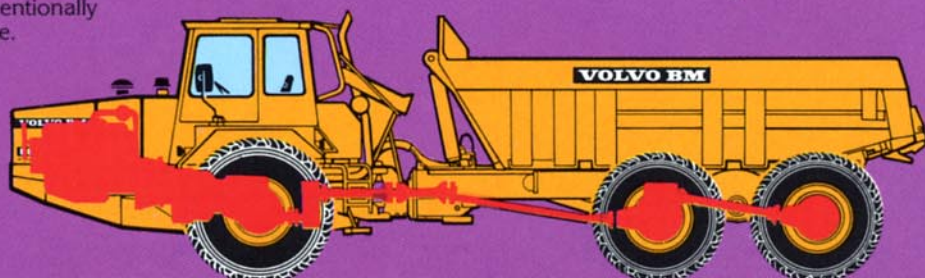
THE DRIVE TRAIN FOR 6-WHEEL DRIVE

Engine

The Volvo BM 861 6×6 is equipped with an in-line 125 kW (170 hp) SAE direct-injected 6-cylinder Volvo engine – the most reliable and fuel-efficient type of engine in this horsepower class. This engine, the TD60, has been manufactured in the thousands for use in construction machines, trucks and industrial applications. The engine is turbocharged to produce a more efficient combustion, higher power and lower fuel consumption than an equivalent conventionally aspirated engine.

Transmission

The Volvo BM power-shift gearbox enables the driver to shift easily through the entire speed range. The high/low gear range and 6-wheel drive are selected pneumatically and gear-changing is carried out with short, easy movements – all from the same lever. Power is transmitted to the wheels via a drive train of well-matched, genuine Volvo components. This ensures long life for the 861 6×6.

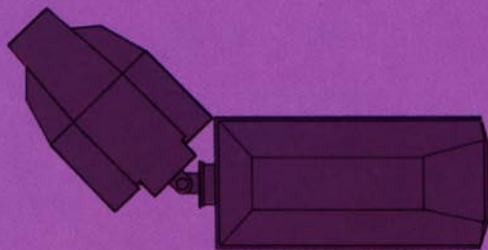


BOGIE WITH TWO DRIVE AXLES

The bogie and rotating cylinder between tractor unit and trailer are fundamental design features of the 861 6×6. The rotating cylinder allows the tractor unit to rotate independently of the trailer unit. This enables the wheels to follow irregularities in the terrain while maintaining full ground contact. The Volvo BM bogie with tandem drive axles is a lightweight construction with high ground clearance. The axles are independently suspended, giving each pair of wheels great individual freedom of movement. This gives the machine a smooth "floating" ride. The all-wheel-driven bogie also makes it easy to back right up to the dumping point and drop the load over the edge. This reduces the need for bulldozers.

ARTICULATED STEERING

Articulated steering makes the 861 6×6 easy to manoeuvre in confined spaces, loading and dumping sites for example.



COMFORT

Off-road hauling at an efficient work rate demands a comfortable and well appointed cab. The driver must stay fresh to the end of a long working shift. The 861 6×6 has a snug cab with an efficient heating and fresh air system. It is also well insulated for sound and has a superb seat, fully adjustable to suit the driver's height and build.

Safety

The cab is fully tested and approved to ROPS standards. Large window areas and a central cab position, give the driver good directional control and excellent visibility. The brake system is divided into two circuits, with disc brakes on all axles. This is comforting to know when you are hauling heavy loads on downhill grades and over boggy terrain.

Ergonomic controls

This easy-to-steer machine is ergonomically planned. 6-wheel drive for example, can be engaged on the move by a selector built into the gear lever. The differential locks are foot-operated on the move.



SERVICE

The Volvo BM 861 6×6 is designed from the ground up for easy service.

This means more productive operating hours for your machine. And this in turn means better economy and greater job satisfaction.

- Service points conveniently accessible from ground level.
- Easy filling and checking of oil:
- Well protected battery, easy to inspect.
- Conveniently located filters.
- Fold-up engine bonnet renders the engine compartment easily accessible.





Flywheel rating

Gross rating

Max. torque

Max. torque, gross

No. of cylinders

Cylinder diameter

Stroke

Displacement

Compression ratio

Cold start

Air filter

ENGINE

Volvo TD 60B:6-cylinder, in-line direct-injected turbocharged 4-cycle diesel engine with overhead valves and wet, replaceable cylinder linings.

107.5 kW at 41.5 rps DIN 70020
(146 hp at 2,500 rpm DIN)

125 kW at 41.5 rps SAE gross J 816
(170 hp at 2,500 rpm SAE)

445 Nm at 33.5 rps DIN 70020)
(328 lbf ft at 2,000 rpm DIN)

503 Nm at 33.5 rps SAE J 816
(371 lbf ft at 2,000 rpm SAE)

6

98.425 mm (3.87 in)

120 mm (4.72 in)

5.48 l (334 in³)

16:1

Richer fuel mixture and
thermostart

Dry air cleaner



Circuit division

Parking brake

BRAKE SYSTEM

Driving brakes: Air-hydraulic disc brakes on all axles, dual-circuit system.

One circuit, front axle

One circuit, bogie

Spring-actuated brake on
propeller shaft



Front:

Rim

Tyres

Rim

Tyres

Rear:

Rim

Tyres

WHEELS

13.00-25

18.00-25 radial or cross-ply

19.5-25

23.5-25 radial or cross-ply

17.00-25

20.5-25 radial or cross-ply

Ground pressure: see special table



ELECTRICAL SYSTEM

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



TRANSMISSION

Torque converter,
type stator

Conversion ratio

Hydraulically
operated

gearbox

Make

No. of gears 4/4

Speeds,
forward-reverse

Single-stage with
free-wheeling

2.5:1

Power shift

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1 0-6 km/h, (0-3.7 mph)

2 0-10 km/h, (0-6.2 mph)

3 0-18 km/h, (0-11.2 mph)

4 0-30 km/h, (0-18.6 mph)



Tractor unit:

Type:

Differential lock

Leading bogie axle

Differential lock

Trailing bogie axle

Differential lock

AXLES

Tractor unit: integral part of
transmission

integral part of transmission

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100 % lock-up (dog clutch)

Volvo BM AH 54C

100 % lock-up (dog clutch)

Volvo BM AH 54D

100 % lock-up (dog clutch)



STEERING SYSTEM

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

Max. working pressure

12 MPa (1700 lb/in²)

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 cylinders, type

Double-acting



HYDRAULIC SYSTEM

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

Capacity at 41.7 rps
(2500 rpm)

130 l/min (35 US gal/min,
29 UK gal/min)

Working pressure

12 MPa (1700 lb/in²)

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

Return line

Refill

Strainer

Replaceable paper filter
with magnetic core

Paper filter



TIPPING MECHANISM

Tipping cylinder, type	6-stage single-acting
Tipping angle	63°
Tipping time with load	21 s
Lowering time	21 s
Tipping stop	Mechanical



PNEUMATIC SYSTEM

Compressor	
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 lb/in²)

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

Trailer unit 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 made of welded box sections and a front frame made of welded channel sections.



WEIGHTS

Working weight (oils, coolant and body with wear plates).

18.00–25/20.5–25	Front axle	Bogie	Total weight
Working weight, kg (lb)	7,400 (16314)	8,000 (17637)	15,400 (33951)
Payload, kg (lb)	–	–	18,500 (40785)
Total weight, kg (lb)	10,000 (22046)	23,900 (52690)	33,900 (74736)



GROUND PRESSURE

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

	Tyres	Unladen kPa (lb/in ²)	Laden kPa (lb/in ²)
Front axle	18.00–25 23.5–25	95 (13.65) 80 (11.38)	129 (18.35) 108 (15.36)
Bogie	20.5–25	53 (7.25)	160 (22.75)
Cone penetrometer value at a depth of 250 mm (9.8 in)	18.00–25/20.5–25 23.5–25		61 53



SERVICE REFILL CAPACITIES

	litres	US gal	UK gal
Engine oil 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 and oil change	16	4.2	3.5
Differential-final drive, tractor unit	90	23.7	19.8
Reduction gearbox	1.6	0.42	0.35
Leading bogie axle	38	10.0	8.4
Trailing bogie axle	35	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 F 27.

Heater and defroster: Heating element with fresh air heating and 3-speed fan plus defroster.

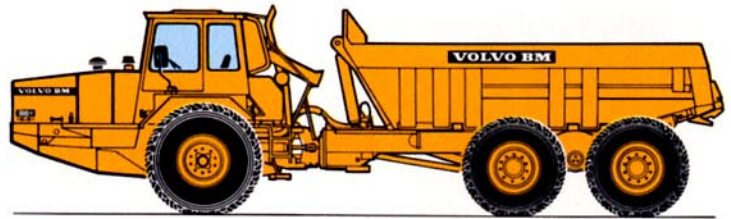
Driver's seat upholstery	Flameproof
Number of exits	3 (door, roof hatch, windshield)

Standard body equipped with wear plates and exhaust gas ducts

The standard body equipped with wear plates should be used for hauling rock or other abrasive material. The wear plates extend the life of the body 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 body floor.



Body volumes SAE 2:1*	Without tailboard	With underhung tailboard
Struck m ³ (yd ³)	8.7 (11.4)	9.0 (11.8)
Heaped m ³ (yd ³)	11.0 (14.4)	11.5 (15.0)

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

STANDARD EQUIPMENT

SAFETY & COMFORT



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

ENGINE & ELECTRICAL EQUIPMENT



- Turbocompressor
- Cold start
- Exhaust gas brake
- Battery disconnect
- Electrical outlet
- Compressed air outlet
- Indicator for air cleaner
- Gauges for:
 - brake pressure
 - fuel
 - engine temperature
 - engine revs and hours
- Pilot lamps for:
 - charging
 - bright lights
 - 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



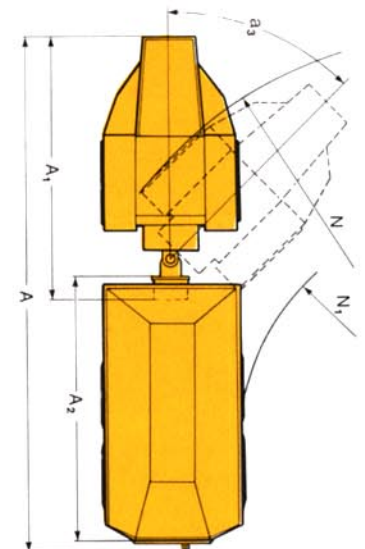
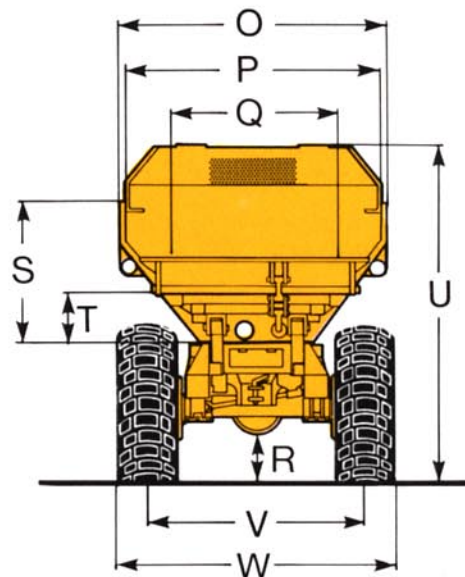
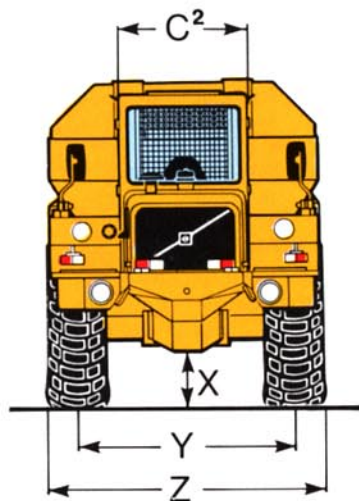
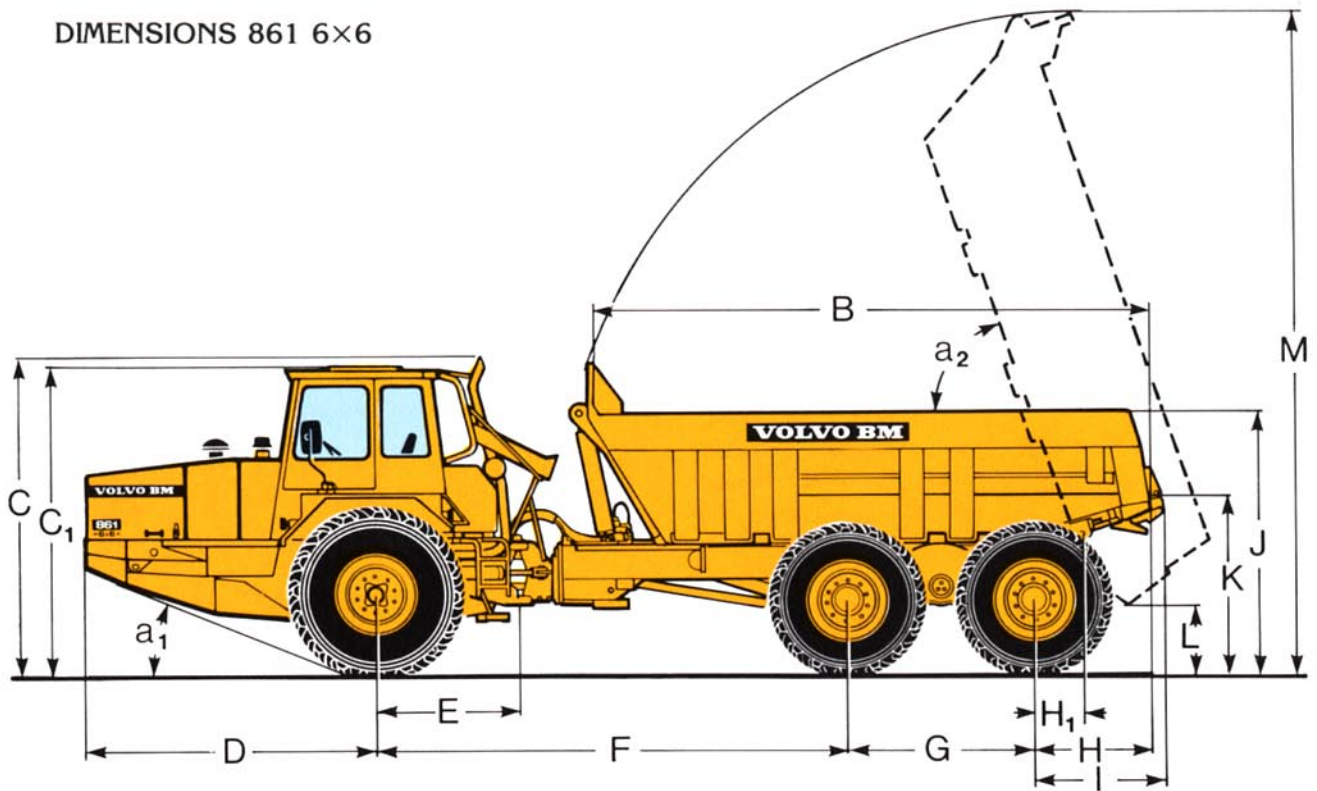
- Exhaust gas heating
- Body with wear plates
- Underhung tailboard

DRIVE TRAIN



- 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

DIMENSIONS 861 6×6



mm (in)	mm (in)	mm (in)	mm (in)
A = 9,960 (392)	F = 4,320 (170)	M = 5,720/5,775* (225.2/227.4*)	U = 2,765/2,800* (108.8/110.2*)
A ₁ = 4,920 (194)	G = 1,650 (65)	N = 7,500 (295)	V = 1,940 (76.4)
A ₂ = 5,540 (218)	H = 1,265 (49.8)	N ₁ = 4,100 (161)	W = 2,500 (98.4)
B = 4,955 (195)	H ₁ = 425 (16.7)	O = 2,480 (97.6)	X = 420/435* (16.5/17.1*)
C = 2,820/2,830* (111/111.4*)	I = 1,090 (42.9)	P = 2,380 (93.7)	Y = 1,960 (77.2)
C ₁ = 2,890/2,900* (113.7/114.1*)	J = 2,450/2,495* (96.5/98.2*)	Q = 1,490 (58.7)	Z = 2,500 (98.4)
C ₂ = 1,360 (53.5)	K = 1,585/1,640* (62.4/64.6*)	R = 395/430* (15.5/16.9*)	a ₁ = 21.5°
D = 2,720 (107)	L = 720/775* (28.3/30.5*)	S = 1,160 (45.7)	a ₂ = 70°
E = 1,280 (50.4)		T = 380 (15)	a ₃ = 45°

* = Unladen machine (tyres 18.00-25/20.5-25)

EXTRA EQUIPMENT

(Standard Equipment on certain markets)

- Cab ventilator
- Lap belt
- Compressed air horn
- Rotating warning beacon
- Engine heater, electric
- Radiator protection
- Tow hitch
- Headlight washers
- Headlight grilles
- Extra fuel filter
- Radio
- High altitude version
- Alternator 90 amps
- Speedometer
- Head restraint
- Protective canopy FOPS
- Tool kit
- Oil bath air cleaner
- Headlight, left-hand, asymmetrical
- Electric heating flange
- Body heating, exhaust gas



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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