

VOLVO BM 861



The dumper shown on the illustration is equipped with an extra oil bath air cleaner.

Specification Volvo BM Dumptruck 861

RELIABLE

The 861 is designed throughout for tough, demanding service. It has a simple basic construction with compatible tried-and-tested Volvo standard components. The 861 is therefore very reliable, requiring a minimum of maintenance and service to achieve optimum economy.

PERFORMANCE

The powerful, fuel-thrifty Volvo turbo-charged engine gives the 861 power to spare. Good acceleration and good negotiability make for high average speeds and fast haulage cycles.

NEGOTIABILITY

The 861 has six large wheels with independent suspension producing excellent "floatability". Four-wheel drive, articulated steering, bogie and differential locks all go to make the 861 the premier off-road haulage vehicle.





ENGINE

Make Volvo
 Model TD 60B
 Type Turbo charged diesel engine

Flywheel rating 107.5 kW at 41.5 r/s, DIN 70020
 (146 hp at 2 500 r/min)
 Gross rating 125 kW at 41.5 r/s, SAE gross J 816
 (170 hp at 2 500 r/min)
 Max. torque 445 Nm at 33.5 r/s, DIN 70020
 (328 lbf ft at 2 000 r/min)
 Max. torque, gross 503 Nm at 33.5 r/s, SAE J 816
 (371 lbf ft at 2 000 r/min)
 Number of cylinders 6
 Cylinder diameter 98.425 mm (3.87 in)
 Stroke 120 mm (4.72 in)
 Displacement 5.48 dm³ (334 in³)
 Compression ratio 16:1
 Cold start Richer fuel mixture
 Air filter Dry air cleaner



TYRES

Front: Rim 13.00—25
 Tyre 18.00—25 Radial or Cross-ply
 Rear: Rim 17.00 W—25
 Tyre 20.5—25 Radial or Cross-ply
 Ground pressure: see special table on page 4.



STEERING SYSTEM

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

Max. working pressure 12 MPa (1700 lb/in²)
 Turns of wheel between locks 3.5 turns
 Steering angle from centre line 45°
 Lock-to-lock steering time ~ 5.2 s at 25 r/s
 (1500 r/min)
 Steering cylinders, type Double-acting



ELECTRICAL SYSTEM

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



TRANSMISSION

Torque converter, type single-stage with free-wheel stator and automatic lock-up
 Conversion ratio 2.3:1. With lock-up 1:1
 Hydraulically operated gearbox type Power shift
 Make Volvo BM
 Number of gears 4/4
 Speeds, forward — reverse
 0— 3.7 mph
 0— 6.2 mph
 0— 8.7 mph
 0—11.8 mph



HYDRAULIC SYSTEM

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

The hydraulic pump is mounted on the righthand side of the engine and is driven directly from the engine.

Make Vickers
 Capacity at 41.5 r/s 2500 r/min 130 l/min 2.2 dm³/s (34 US gal/min, 29 Imp. gal/min)
 Working pressure 12 MPa (1700 lb/in²)
 Ratio engine — hydraulic pump 1:0.8
 Filter:
 Suction line Strainer
 Return line Replaceable paper filter over magnetic core (full flow)
 Refill Paper filter



AXLES

Tractor unit: integral part of transmission
 Make Volvo BM
 Differential lock 100 %

Trailer (bogie) drive axle:
 Make Volvo
 Type RAN 181
 Differential lock 100 % locking
 Trailing axle:
 Make Volvo BM



TIPPING MECHANISM

Tipping cylinders, type 6-stage single-acting
 Tipping angle 70°
 Tipping time with load ~ 18 s
 Lowering time ~ 18 s



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 disc 460 mm (18 in)
 Number of friction pads per brake 2
 Bogie, type Drum brakes
 Drive axle Trailing axle
 Make Volvo Volvo
 Diameter of brake drum 394 mm (15.5 in) 413 mm (16.3 in)
 Friction pads, number/drum 2 2



PNEUMATIC SYSTEM

Compressor, make Bosch
 Displacement 0.225 dm³ (13.7 in³)
 Drive V-belt
 Outlet for tyre pumping Yes

Pressure regulator:
 Relief pressure, max. 0.75 MPa 106 (lb/in²)
 Compressed air reservoir:
 Tractor unit 6+ 15 dm³ (l) (1.6+40 US gal, 1.3+3.3 Imp gal)
 Trailer unit 6+ 15+20+20 dm³ (l) (1.6+4.0+5.3 +5.3 US gal, 1.3+3.3+4.4+4.4 Imp gal)



FRAMES

The frame oscillation joint permits continuous rotation. Torsional stresses in the framework are eliminated. This has permitted the use of a rigid rear frame made of welded box sections and a front frame made of pressed channel sections.

Tractor unit, type
Trailer unit, type

Open channel sections
Welded box sections



VOLUMES

Engine oil, incl. filter	Approx 17 dm ³ (l) (4.5 US gal, 3.7 Imp gal)
Fuel tank	225 dm ³ (l) (59 US gal, 49 Imp gal)
Cooling system	30 dm ³ (l) (8.0 US gal, 6.6 Imp gal)
Hydraulic system	160 dm ³ (l) (42.3 US gal, 35 Imp gal)
Hydraulic tank	135 dm ³ (l) (35.7 US gal, 29 Imp gal)
Hydraulic transmission	22 dm ³ (l) (5.8 US gal, 4.8 Imp gal)
Hydraulic transmission at oil change	18 dm ³ (l) (4.8 US gal, 4.0 Imp gal) incl oil filter
Differential — final drive, tractor unit	90 dm ³ (l) (23.7 US gal, 19.8 Imp gal)
Reduction gearbox	1.6 dm ³ (l) (0.42 US gal, 0.35 Imp gal)
Differential and hub reduction, trailer unit	33 dm ³ (l) (8.7 US gal, 7.3 Imp gal)

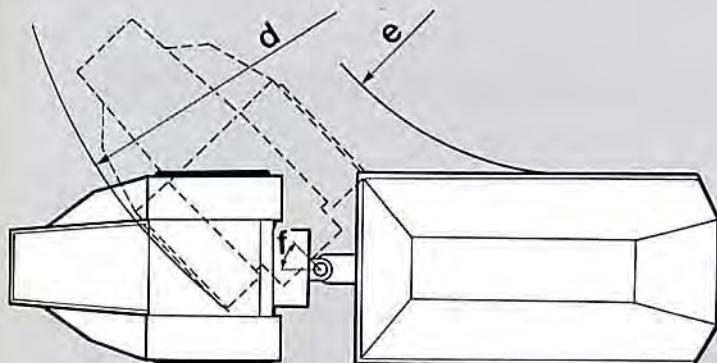
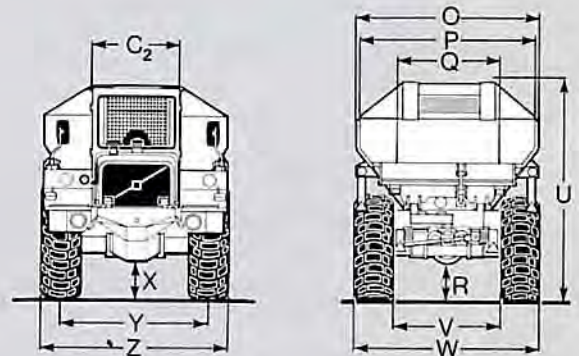
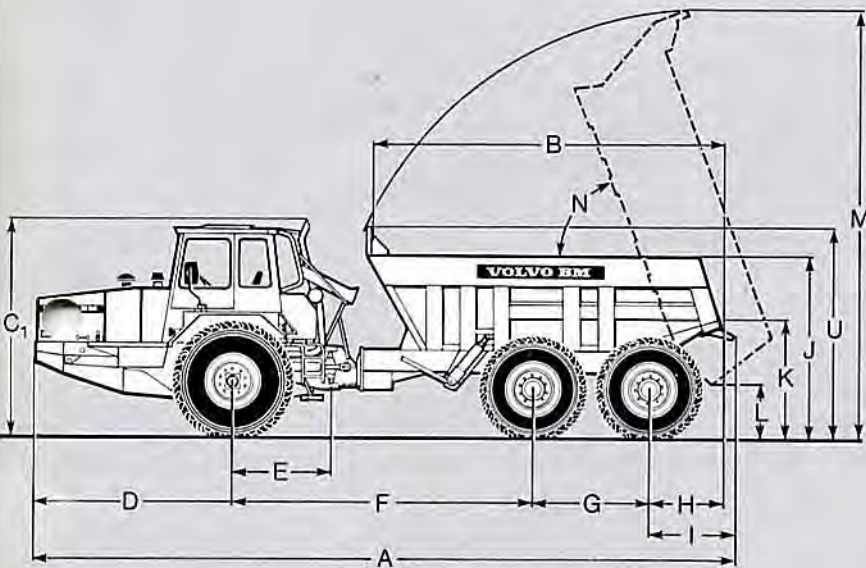


CAB

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

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

Upholstery	Flameproof
Points of attachment for safety belt	Yes
Number of exits	3 (doors and cab hatch)



STANDARD MACHINE DIMENSIONS 861

mm (in)		mm (in)	
A = 9400 (370)		N = 70°	
B = 4655 (183)		O = 2480 (89)	
C ₁ = 2890/2900* (114/118)*		P = 2380 (93.7)	
C ₂ = 1360 (55)		Q = 1491 (58.7)	
D = 2720 (107)		R = 395 (15.6)	
E = 1280 (50)		U = 2800 (110)	
F = 4050 (159)		V = 1940 (76)	
G = 1540 (61)		W = 2500 (98)	
H = 1010 (40)		X = 420 (16.5)	
I = 1090 (43)		Y = 1960 (77)	
J = 2440/2495* (96/98)*		Z = 2500 (98)	
K = 1585/1640* (63/65)*		d = 7500 (295)	
L = 720/775* (28/31)*		e = 4100 (162)	
M = 5719/5775* (225/227)*		f = 45°	

* = unladen machine
(cross ply tyres 18.00—25/20.5—25)

L with rear extension = 280 mm (11 in)



WEIGHTS

Working weight (oils, coolant, fuel tank, driver, cross ply tyres and standard body).

	Front axle	Bogie	Total weight
Unladen machine	7290 kg (16070 lb)	5570 kg (12280 lb)	12860 kg (28350 lb)
Machine with max. load 20000 kg (44100 lb)	11000 kg (24250 lb)	21880 kg (48250 lb)	32880 kg (72500 lb)

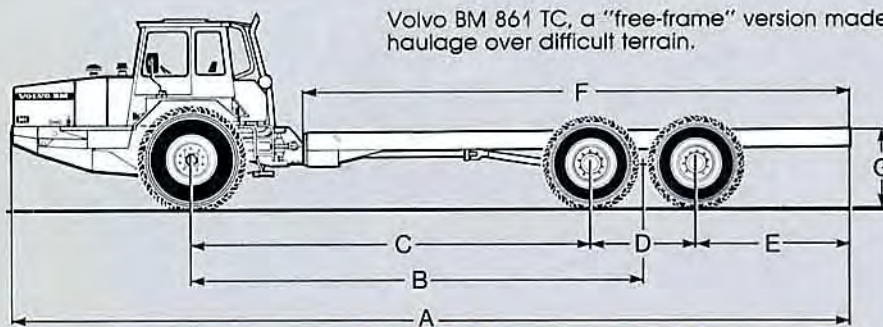


GROUND PRESSURE

Ground pressure at 15% slump of unladen diameter and 10500 kg (23150 lb) front axle load, 20880 kg (46040 lb), bogie load.

	Tyres	Unladen kPa (lb/in ²)	Laden kPa (lb/in ²)
Front axle	18.00–25	88 (12.8)	132 (19)
Bogie	20.5–25	38 (5.5)	138 (20)
Front axle	23.5–25	73 (10.6)	109 (15.8)

TERRAIN CHASSIS 861 TC



Volvo BM 861 TC, a "free-frame" version made for heavy superstructures and haulage over difficult terrain.

	TC 59 mm (in)			TC 40 mm (in)		
Frame length, trailer unit	8010 (315)			4145 (163)		
Max. width, front	2500 (98)			2500 (98)		
Track, front	1960 (77)			1960 (77)		
Max. width, rear	2500 (98) with 20.5×25 tyres			2500 (98) with 20.5×25 tyres		
Track, rear	1940 (76) with 20.5×25 tyres			1940 (76) with 20.5×25 tyres		
	Front	Rear	Total	Front	Rear	Total
Chassis weight*, kg (lb)	6840 (15079)	3940 (8686)	10780 (23765)	6740 (14858)	3540 (7804)	10280 (22662)
Load, incl. superstructure, kg (lb)	3660 (8068)	17460 (38490)	21120 (46558)	3760 (8289)	17860 (39372)	21620 (47661)
Total weight, kg (lb)	10500 (23147)	21200 (46735)	31700 (69882)	10500 (23147)	21200 (46735)	31700 (69882)

DIMENSIONS 861 TC, mm (in)

	TC 59 mm (in)	TC 40 mm (in)
A	12430/12650** (489/498)**	9200/9420** (362/371)**
B	6630 (261)	4818 (190)
C	5910 (233)	4050 (159)
D	1600 (63)	1540 (61)
E	2200 (87)	250 (10)
F	8010 (315)	4145 (163)
G	1207 (47)	1175 (46)
H frame width	840 (33)	840 (33)

* Chassis weight includes oils, coolant, full fuel tank, driver, cross ply tyres.

** With front-mounted hydraulic pump.



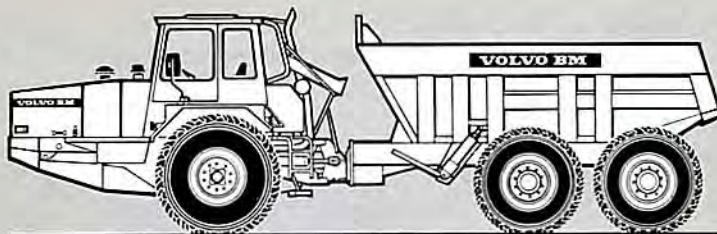
DUMPER BODIES Standard body**

The body is designed and built to facilitate the fast loading of loose materials. It is fabricated from a lighter than normal, hardened steel plate with very high impact-resistant properties, even at low temperatures. This special steel plate reduces the body weight and increases payload capacity.

The extended body headboard protects the cab and the driver from spill impact. To enable the driver to keep an eye on the loading operation and the load itself during transit, a viewing window is built into the headboard.

The sides are reinforced externally with pressed channel sections welded to the body.

The body has been designed to work efficiently with any loader or excavator on the market today. The body shape ensures that the weight of a capacity load of loose excavated material is distributed correctly over the axles. This improves stability, increases traction and reduces high stress loadings.



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

** This body can not be supplied with exhaust-gas ducts

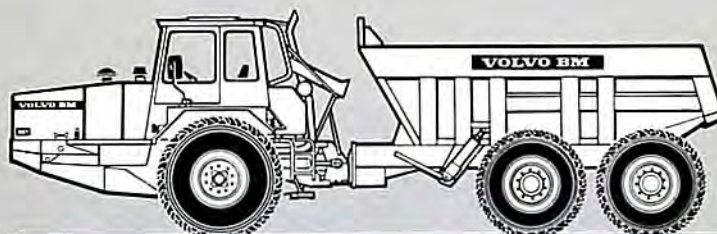
Standard body equipped with wear plate and exhaust gas ducts

(weight increase 800 kg, 1764 lb)

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

The sides and wear plates have a yield strength of 90 kgf/mm² and a hardness of 360–440 HB.

Ducts built into the floor of the body facilitate exhaust-gas heating if required.



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

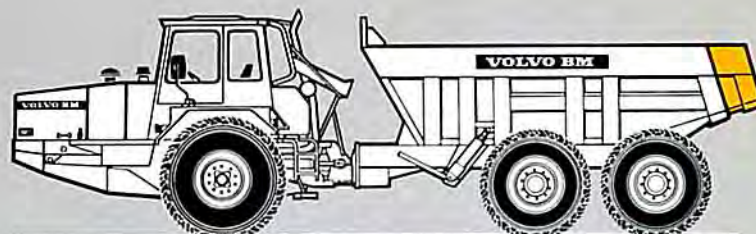
Extended body with wear plates and exhaust-gas ducts

(weight increase 1100 kg, 2426 lb).

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

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

Ducts built into the floor of the body facilitate exhaust-gas heating if required.



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

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

STANDARD EQUIPMENT



SAFETY AND COMFORT

- Impact-tested ROPS safety 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 safety belt
- Bally plates front unit
- Cigarette lighter and ashtray
- Horn
- Main headlights, bright/dim
- Reverse lights
- Direction indicators
- Cab lighting
- Indicator for air cleaner
- Complete tyre pumping unit
- Protective grille for rear window
- Hazard flashers
- Cab hatch
- Tool kit
- Brake lights
- Position lights



INSTRUMENTATION

- Pilot lamp, extra lighting
- Pilot lamp, air cleaner
- Pilot lamp, charging
- Pilot lamp, direction indicators
- Pilot lamp, oil pressure, engine
- Pilot lamp, bright lights
- Pilot lamp, high and low gear
- Air pressure gauge
- Fuel gauge
- Pilot lamp, coolant temp.
- Pilot lamp, parking brake
- Pilot lamp, oil temperature, transmission
- Pilot lamp, oil pressure, transmission
- Revolution and hour counter gear

EXTRA EQUIPMENT

(Standard equipment on certain markets)

- Cab ventilator
- Safety belt
- Compressor horn
- Rotating warning beacon
- Engine heater, electric
- Preheated intake air
- Heavy-duty air cleaner
- Narrow fenders for driving in confined spaces
- Protective plate for propeller shaft
- Radiator protection
- Tow hitch
- Body heater (exhaust gas)
- Underhung tailboard
- Overhung tailboard
- Headlight washer
- Headlight grilles
- Extra fuel filter
- Speedometer
- Radio
- Extended dumper body
- Wear plates for standard body and for body extension
- Oil bath air cleaner
- Towing equipment



UNDERHUNG TAILBOARD

An underhung tailboard with operating mechanism which automatically opens the tailboard when the body is tipped.

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

A tailboard should always be used for road haulage in order to prevent spillage. The tailboard cannot be combined with a body extension.

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



OVERHUNG TAILBOARD

On all machines equipped with an underhung tailboard, it is possible to mount an upper tailboard which, together with the lower tailboard, closes off the entire opening on the dumper body. This extra tailboard is intended to be used for hauling gravel, sand and fluid materials. The design of the tailboard does not permit rock, boulders and solid clay to be carried. For such haulage, the tailboard should be removed.

An overhung tailboard cannot be combined with a body extension.

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

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

Produktion gruppen för skånska tryckerier AB, 1990
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