

442 C

VOLVO BM



POWERFUL AND COMPACT 442 C

The forerunners of this new dumptruck have had a long history of success. This experience combined with the latest Volvo BM design and fabrication technology, ingenious engineering and the use of high-quality materials has produced the 442 C, a lightweight yet rugged workhorse with low tare weight to payload capacity. Fast cycle times are another feature of this truck, with the powerful Volvo diesel and automatic gearbox producing good performance even on uphill grades. Because a contented driver, as well as high machine performance are fundamental to efficient haulage work, we have lavished a great deal of attention on the driver's working environment. The cabs in our new generation of rigid dumptrucks feature state-of-the-art ergonomics, making them quiet and comfortable with conveniently positioned and easy-to-operate controls.

- Powerful—high average speeds
- Agile—small turning radius
- High capacity—high payload/low tare weight
- Comfort and safety—increased driver efficiency
- Easy to service—more effective working time





BIG LOADS, HIGH SPEEDS

The 442 C is a 35-tonner (short tons)—that's a big load for such a compact machine. The load factor of 1.45, is also an indication of the favourable ratio between payload capacity and tare weight. High average speeds are essential on the kind of worksite where this truck would be employed. This demands power. The beefy Volvo TD121 K diesel, developing 290 kW (395hp) SAE gives you the power, which is then converted into effective tractive force ("rimpull") with optimum efficiency by the automatic gearbox. The torque converter which disengages at a given engine speed, has a lock-up function. This provides direct drive in order to boost machine performance.



ROCK BODY AS STANDARD

The rock body is built to a new, lightweight design and fabricated from a special, high-quality steel plate. This material meets the toughest requirements on wear resistance (HB 360-440) and strength (tensile strength 125 kg/mm²). This advanced design reduces stress concentrations and the risk of cracking.

Low load profile

The geometric design of the body has resulted in a compact, high volume unit with both low loading height and low centre of gravity.



SAFE AND COMFORTABLE

A snug work station

The driver operates his 442 C from a cab that is safe, extremely comfortable, well insulated and equipped with an effective heating and ventilation system. This helps to keep the driver alert and on top of the job during long spells at the wheel. Controls and instruments have been carefully designed and ergonomically located, then put to the test in prolonged practical trials.

Safe to drive

The 442 C is easy to drive. It has a small turning radius making it highly manoeuvrable and it is sure-footed and stable on both poor surfaces and steep gradients.

The brake system

The dual-circuit brake system has a retarder fitted between the torque converter and the gearbox. Safe, proven and effective.

The steering system

The hydromechanical steering gives you full power steering in combination with complete mechanical coupling between the steering wheel and the road wheels. This system retains a "feel" for the surface and safe, positive manoeuvring.



EASY TO SERVICE



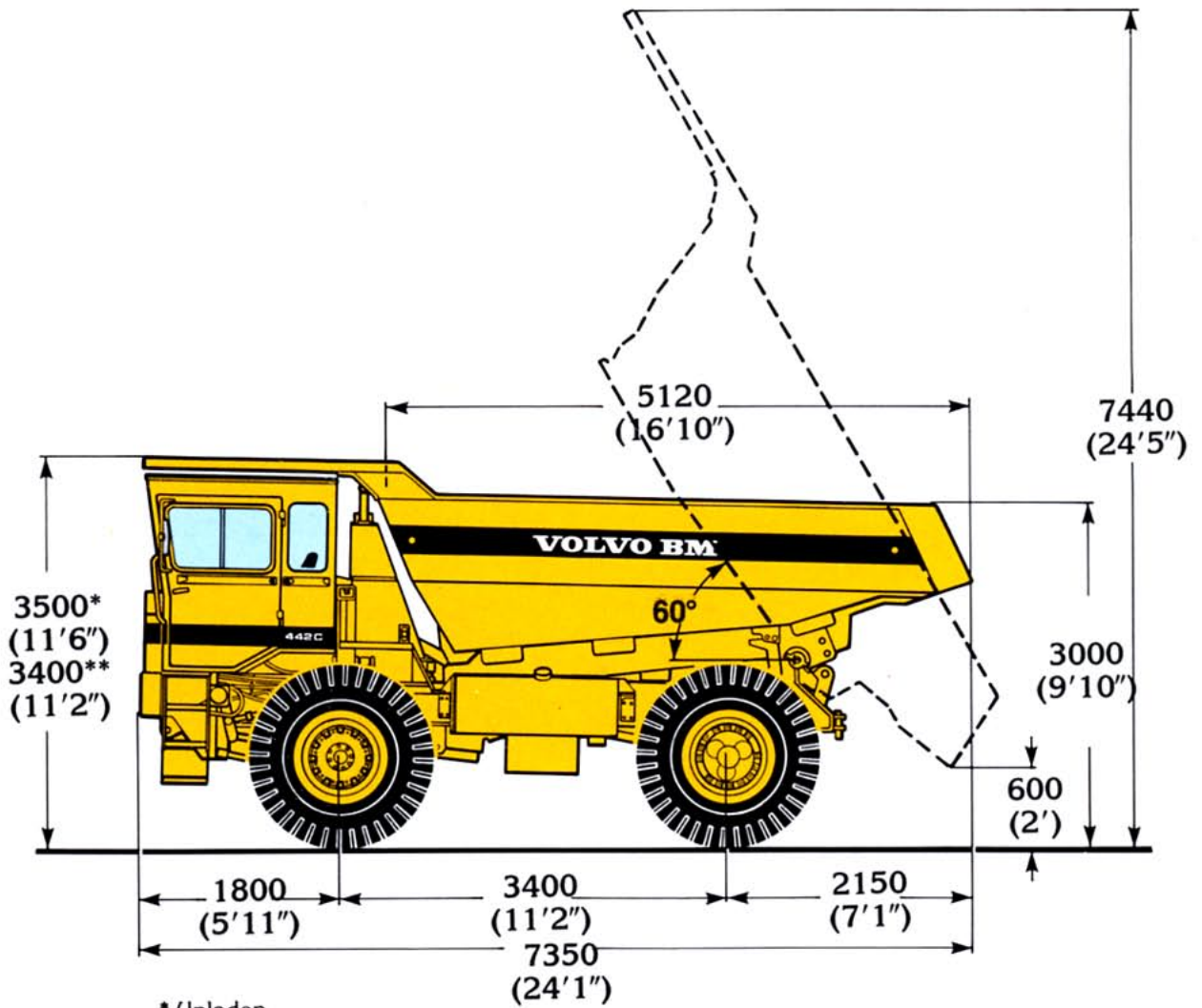
Easily accessible

The engine and gearbox are easily accessible, and extensive standardization means that very few tools are needed for maintenance. Grab bars and non-slip steps make access for daily inspection easier and safer.

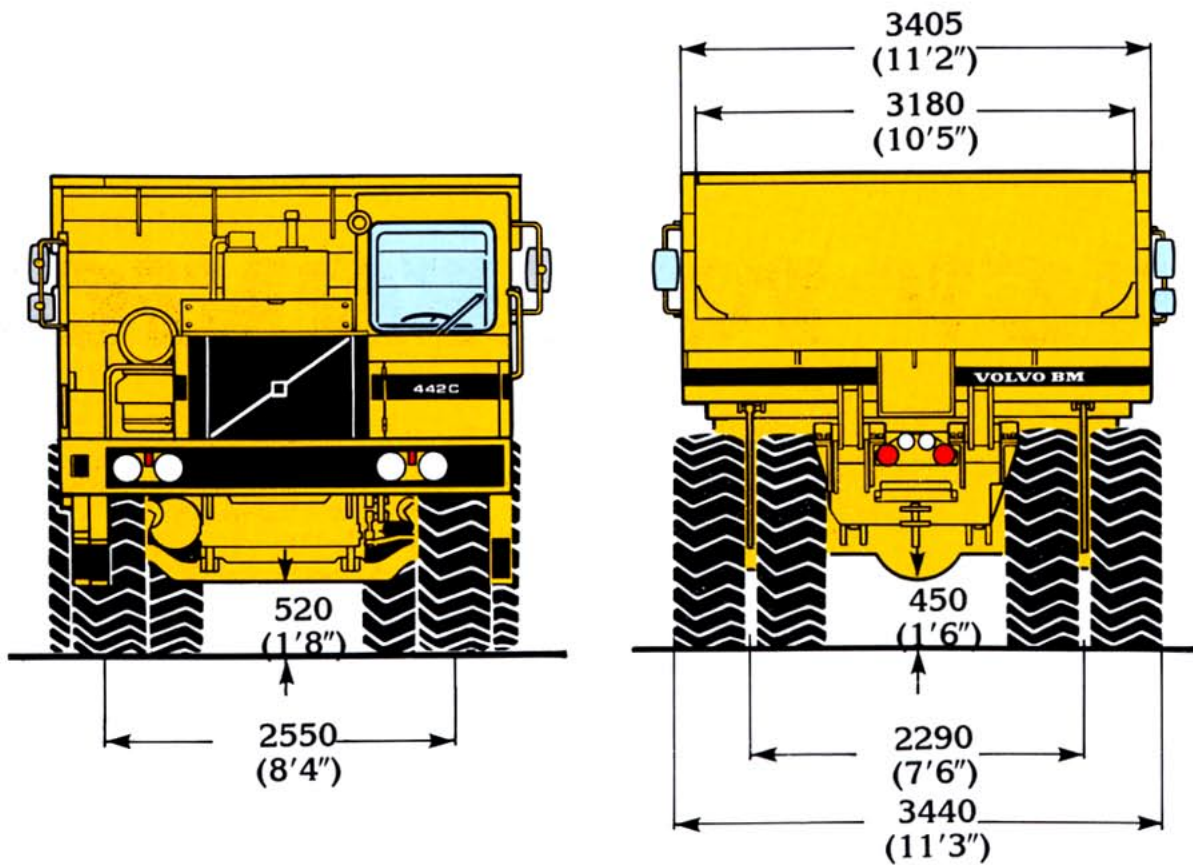
Tightly grouped electrical system

The electrical system is based on printed circuit boards. It is easily accessible and contains relays and fuses. This means fewer contact points, easier fault tracing and greater reliability.

DIMENSIONS in mm (ft, in)



* Unladen
 ** Laden





ENGINE

Volvo TD 121 K—a 6-cylinder, in-line, direct-injected turbocharged 4-stroke diesel engine with wet, replaceable cylinder linings.

Gross rating	290 kW at 35 rps SAE J270 (395 hp at 2,100 rpm SAE)
Flywheel rating	272 kW at 35 rps DIN 70020 (370 hp at 2,100 rpm DIN)
Max. torque	1,575 Nm at 23.3 rps SAE J270 (1,162 lbf ft at 1,400 rpm SAE) 1475 Nm at 23.3 rps DIN 70020 (1,091 lbf ft at 1,400 rpm DIN)
No. of cylinders	6
Bore	130 mm (5.1 in)
Stroke	150 mm (5.9 in)
Displacement	12.0 litres (732 in ³)
Compression ratio	14.2:1
Automatic cold starter	Cold starter boosts fuel injection and incorporates element to preheat intake air.
Air filters	Cyclone cleaner, main filter of paper type and catch-all safety filter.
Radiator fan	Suction fan mounted on engine.



ELECTRICAL SYSTEM

Voltage	24 V
Battery capacity	150 Ah
Alternator	1,260 W
Starter motor	4.8 kW (6.5 hp)



TRANSMISSION

Torque converter, type	Allison TC 497 with lock-up
Torque multiplication ratio	Max. 2.7:1
Gearbox	Allison CLBT 754 Automatic planetary-type gearbox with built-in retarder

Gear	Top speed		Ratio
	km/h	mph	
1st	11.0	6.8	5.18:1
2nd	17.9	11.1	3.19:1
3rd	28.2	17.5	2.02:1
4th	41.3	25.7	1.38:1
5th	57.0	35.4	1.00:1
Reverse	5.7	3.5	9.93:1



BRAKE SYSTEM

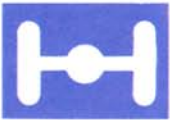
Retarder incorporated in transmission and air-operated drum brakes in wheels.

Service brake 1	Retarder incorporated in gearbox
Service brake 2	2-circuit air-operated drum brakes
Circuit division	Circuit 1 supplies the front brakes Circuit 2 supplies the rear brakes
Parking brake	Spring application of drum brakes



WHEELS

Rims 13.00-25
Tyres 18.00-25/32 E3



AXLES

Fully floating drive axle with planetary hub reduction.

Front axle

Forged in one piece, carried on leaf spring assembly.

Rear axle

Bolted directly to the truck frame.

Reduction ratios, total in rear axle

11.86:1



STEERING SYSTEM

Hydraulic power steering with mechanical return

Make

ZF

Lock-to-lock turns

4

Steering cylinder, type

1 double-acting

Hydraulic pumps

Direct-driven converter-dependent gear pump mounted on gearbox and wing pump driven directly from the engine for better steering when idling.

Wing pump

0.3 l/s (0.08 US gal/s, 0.07 UK gal/s) at 35 rps = 20 l/min (5.3 US gal/min, 4.4 UK gal/min) at 2,100 rpm

Filter

1 paper filter with magnetic core

Manœuvring data

Minimum turning radius

7,600 mm (25')

Minimum sweep radius

left turn

8,900 mm (29'2")

right turn

8,600 mm (28'4")



TIPPING SYSTEM

Hydraulic pump, converter-dependent gear pump, driven directly from gearbox.

Number

1

Capacity

2.8 l/s (0.7 US gal/s, 0.6 UK gal/s) at 35 rps = 167 l/min (44 US gal/min, 37 UK gal/min) at 2,100 rpm

Working pressure

20 MPa (2,900 psi)

Type

Drive system

Gear-driven PTO

Number of pump take-offs

1

Filter

1 paper filter with magnetic core



TIPPING MECHANISM

Tipping cylinder

One 3-stage telescopic cylinder, 2 stages are double-acting

Tipping time with load

13.5 s

Lowering time

13.5 s

Tipping angle

60°

Tipping stop

Rubber buffers

RIMPULL GRAPH

(Excl. rolling resistance)

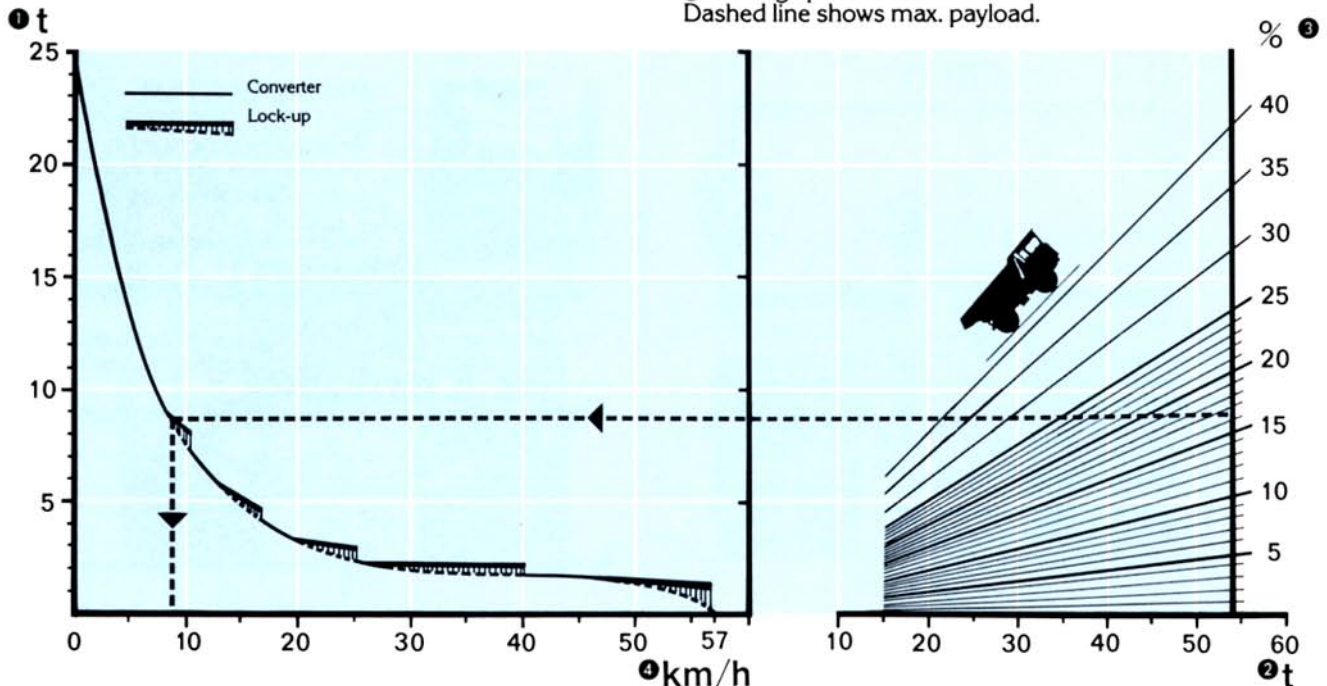
① Rimpull in t (kg × 1,000)

② Gross vehicle weight in t

③ Grade resistance + rolling resistance in %

④ Driving speed in km/h

Dashed line shows max. payload.





PNEUMATIC SYSTEM

Compressor:
Capacity

8.4 l/s (1.8 UK gal/s, 2.2 US gal/s) at
35 rps = 508 l/min (112 UK gal/
min, 134 US gal/min) at 2,100 rpm

Drive

Driven directly from engine

Automatic frost
protection pump

Pressure regulator:
Relief Pressure

Actuate Relief
6.6 bar (96 psi) 7.6 bar (110 psi)

Compressed air
reservoirs:
Volume

60 + 60 = 120 litres (26.4 UK gal,
31.7 US gal)



FRAME

All-welded frame of I-section beams
with cross ties.



Front axle:

Front axle: leaf springs and hydraulic
shock absorbers



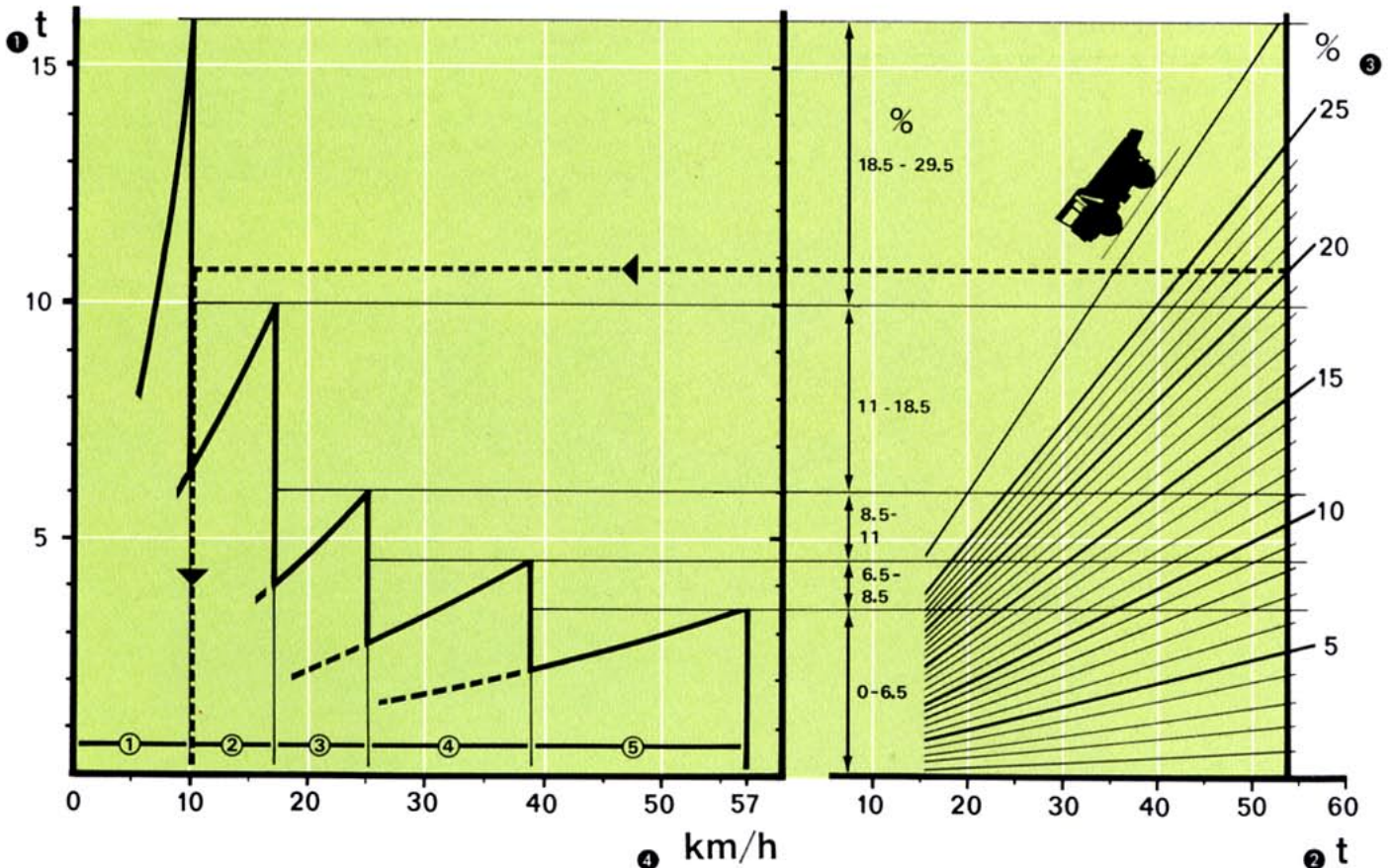
SERVICE REFILL CAPACITY

	Litres	UK gal	US gal
Engine oil, incl. filter, total	32.5	7.2	8.6
at change	28	6.2	7.4
Cooling system	65	14.3	17.2
Fuel tank	415	91.3	109.6
Gearbox, total	42	9.2	11.1
at change	42	9.2	11.1
Drive axle	52	11.4	13.7
Hydraulic system	105	23.1	27.7

BRAKING EFFORT GRAPH

(incl. retarder and engine brake excl. rolling
resistance)

- ① Braking effort in t (kg × 1000)
 - ② Gross vehicle weight in t
 - ③ Grade resistance—rolling resistance in %
 - ④ Driving speed in km/h
- Dashed line shows max. payload





CAB

Steel cab, mounted on rubber pads. Heat and sound insulated. Heating and defroster system.

Number of exits	1 door and emergency exit via window
Driver's seat	Seat adjustable to driver's weight with armrests and lap belt.
Internal noise level	Max. 80 dB(A)



DUMPER BODY

Basic body

Body volumes
ISO 2:1

Volume struck, m³ (yd³) 16.0 (20.9)
Volume heaped, m³ (yd³) 20.5 (26.8)

Material

Hardened and tempered abrasion-resistant steel plate with tensile strength of 125 kg/mm²
Hardness 360–440 HB

Plate thickness —bottom	20 mm (0.8 in)
—sides	10 mm (0.4 in)
—front	10 mm (0.4 in)

Weight 6,500 kg (14,330 lb)

**) Volumes below 10 m³ are given to one decimal place. Volumes of 10 m³ or more are rounded off to the nearest 0.5 m³.*



WEIGHTS

Working weight (driver, oils, coolant, full fuel tank and rock body)

	Front axle	Rear axle	Total
Unladen machine, kg (lb)	10,900 (24,030)	11,100 (24,469)	22,000 (48,500)
Payload kg (lb)	7,000 (15,432)	25,000 (55,114)	32,000 (70,546)
Payload sh. tons			35.0
Total weight, kg (lb)	17,900 (39,462)	36,100 (79,584)	54,000 (119,046)

$$\text{Load factor} = \frac{\text{Payload}}{\text{Unladen weight}} = \frac{32,000}{22,000} = 1.45$$



OVERHUNG TAILBOARD

Machines both with and without elevated body can be fitted with an overhung tailboard. This extra tailboard remains closed under its own weight and opens when the load is dumped.

The design of the overhung tailboard does not permit rock and boulders to be carried. For such haulage, the tailboard should be removed. The overhung tailboard increases the weight of the body by 325 kg (716 lb).



STANDARD EQUIPMENT



SAFETY & COMFORT

- Cab heating with filtered fresh air intake and defroster
- Ergonomically designed and adjustable driver's seat
- Windshield wipers
- Windshield washers
- Rear-view mirrors
- Sun visor
- Lap belt
- Cigarette lighter and ashtray
- Tinted glass
- Horn
- Lights: Headlights, Bright/dim/asymmetric
Curb and fog lights
Parking lights
- Direction indicators
- Reversing lights
- Brake lights
- Tail lights
- Cab lighting
- Instrument lighting
- Indicator for air cleaner
- Complete tyre inflation kit
- Speedometer
- Tachometer
- Anti-theft lock
- Hazard flashers
- Rock ejectors
- Compressed air outlet
- Buzzer for pneumatic system
- Hand throttle
- Silencer



ENGINE & ELECTRICAL SYSTEM

- Alternator
- Pilot lamps for: Parking light
Bright lights
Hazard flashers
Charging
- Engine oil pressure
- Body up
- Lock-up
- Engine preheater
- LED lights, switches
- Instruments: Hour counter
- Air pressure gauge (2 circuits)
- Engine oil pressure gauge
- Coolant temperature gauge
- Gearbox oil pressure gauge
- Gearbox oil temperature gauge
- Tachometer
- Speedometer



BODY EQUIPMENT

- Body heating (exhaust gas)
- Rock body
- Lock in tipped position



TRANSMISSION

- Torque converter
- Automatic gearbox
- Automatic lock-up

EXTRA EQUIPMENT

(Standard equipment on certain markets)

- Heated rear-view mirrors
- Heated driver's seat
- Air conditioning
- Tachograph
- Electric engine preheater
- Guards around fuel and air tanks
- Electric transmission heater
- Elevated body for light material
- Rubber-lined body
- Emergency steering
- Spare wheel
- Reversing alarm
- Overhung tailboard, self-opening
- Silencer, unheated body
- Tyre alternative E4
- Passenger compartment heater
- Radio/cassette player
- Guard ring, front wheel

VOLVO BM

VOLVO BM AB ESKILSTUNA SWEDEN

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

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ENGELSKA
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