

VOLVO BM

442 C

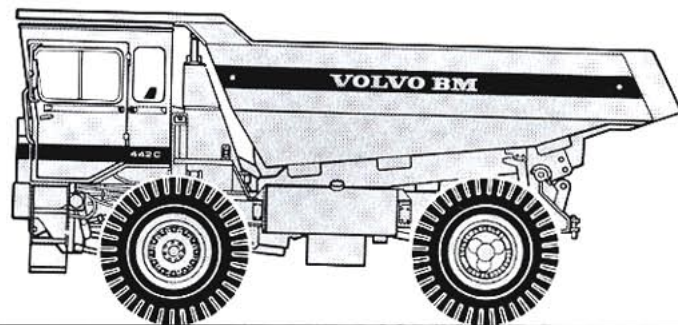


VOLVO BM 442 C

- POWERFUL AND COMPACT

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.



Advantages - 442 C

- 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 TD 121 K diesel, developing 290 kW (395 hp) 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 130 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.



EXEMPLARY WORKING ENVIRONMENT

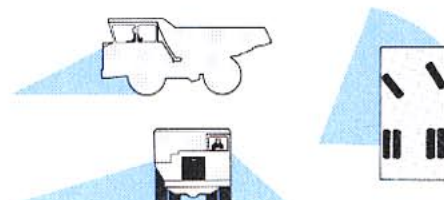
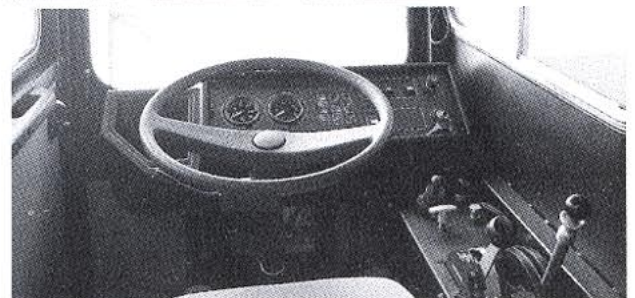
The driver has excellent visibility from his driving position, with a clear view across the full width of the truck.

Roomy and easy to work in

The cab is roomy, with well planned details. The seat is fully adjustable according to the driver's weight and height. It is hydraulically sprung and damped and is fitted with armrests. The cab is snug, with linings of soft, cushioning material.

Eminently driveable

The 442 C is easy to drive. It is agile and efficient both on poor surfaces and on steep gradients. It is also fast - 57 km/h - on a level road.





ENGINE

Volvo TD 121 G, a 6-cylinder, inline, direct-injected turbocharged 4-stroke diesel engine with wet, replaceable cylinder linings.

Air filter: Cyclone cleaner, main filter of paper type and catch-all safety filter.

Cold starter boosts fuel injection and incorporates starting element to preheat intake air.

Gross rating	rps (rpm)	35 (2100)
SAE J 1349 Brutto	kW (hp)	290 (395)
Flywheel rating	rps (rpm)	35 (2100)
DIN 70020 / 6271	kW (hp)	272 (370)
Max. torque	rps (rpm)	23,3 (1400)
SAE J 1349 Brutto	Nm (lbf ft)	1575 (1162)
DIN 70020 / 6271	Nm (lbf ft)	1479 (1092)
No. of cylinders		6
Displacement	dm ³ l (in ³)	12,0 (732)
Bore	mm (in)	130 (5,12)
Slaglängd	mm (in)	150 (5,91)
Compression ratio		14,2:1



ELECTRICAL SYSTEM

The electrical system, based on printed circuit boards, is concentrated at one point in the cab.

This means fewer contact points, easy fault-tracing and greater reliability.

Batteries	No.	2
Voltage	V	24
Battery capacity	Ah	160
Generator rating	W/A	1260 / 55
Starter motor power	kW (hp)	4,8 (6,5)



DRIVETRAIN

Transmission : Automatic planetary-type gearbox with built-in retarder.

Drive axle : Fully floating drive axle with planetary hub reduction.

Torque converter		Allison
		TC 497
Torque multiplication		2,7:1
Transmission		Allison
		CLBT 754
Speed		
Gear	1	km/h (mile/h)
	2	11,0 (6,8)
	3	17,9 (11,1)
	4	28,2 (17,4)
	5	41,3 (25,5)
		57,0 (35,2)
Reverse		km/h (mile/h)
Reduction		5,7 (3,5)
Gear	1	5,18:1
	2	3,19:1
	3	2,02:1
	4	1,38:1
	5	1,00:1
Reverse		9,93:1
Reduction, total		11,86:1



WHEELS

Rims
Tyres

13.00-25
18.00-25/32 E3



FRAME

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



SUSPENSION

Front axle: Leaf springs and hydraulic shock absorbers.



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 on rear wheels

Compressor, capacity	dm ³ /s (l/min)	508
	(US gal/min)	(134)
at	r/s (r/min)	35 (2100)
Pressure regulator		
Cut-in	bar (lbf/in ²)	6,6 (94)
Cut-out	bar (lbf/in ²)	7,6 (108)
Brake friction area/wheel		
front	cm ² (in ²)	1770 (275)
rear	cm ² (in ²)	1770 (275)
Reservoir	No.	2
Total volume	dm ³ (l) (ft ³)	120 (4,24)
Park. brake frict. area	cm ² (in ²)	3540 (549)
Retarder		
braking effect	kW (hk)	265 (360)
at	r/s (r/min)	35 (2100)



STEERING SYSTEM

Hydraulic ZF-power steering with mechanical return.

Lock-to-lock turns: 4. Steering cylinder: 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.

Steering cylinder		
Diameter	mm (in)	100 (3,94)
Travel	mm (in)	350 (13,78)
Piston rod diam.	mm (in)	32 (1,26)
Working pressure	MPa (lbf/in ²)	10 (1450)



CAB

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

Seat adjustable to driver's weight with armrests and lap belt.

Noise level in cab, max.	dB(A)	80
Driving seat		ISRI 5000
Emergency exits		2



WEIGHTS

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

Dumper body weight	kg (lb)	6500 (14330)
Service weight		
front axle	kg (lb)	10900 (24050)
rear axle	kg (lb)	11100 (24450)
total	kg (lb)	22000 (48500)
Payload		
front axle	kg (lb)	7000 (15400)
rear axle	kg (lb)	25000 (55100)
total	kg (lb)	32000 (70500)
Gross weight		
front axle	kg (lb)	17900 (39500)
rear axle	kg (lb)	36100 (79600)
total	kg (lb)	54000 (119000)



HOIST AND BODY

Tipping cylinder: One 3-stage telescopic cylinder, 2 stages are double-acting. Tipping stop: Rubber buffers.

Hydraulic system: Hydraulic pump, converter-dependent, driven directly from gearbox. Common oil flow with steering system.

Dumper body: Material: Hardened and tempered abrasion-resistant steel plate. Exhaust heating.

Optional equipment:

Overhung tailboard: Machines both with and without elevated body can be fitted with an overhung tailboard. This extra tailboard is kept closed under its own weight and opens when the load is dumped. The design of the overhung tailboard does not permit stones and boulders to be carried. For such materials, the tailboard should be removed. The overhung tailboard increases the weight of the body by 250 kg (550 lb).

Tipping mechanism		
Tipping time with load	s	13,5
Lowering time	s	13,5
Hydraulic system		
Flow rate	dm ³ , l / min (US gal / min)	167 37
and speed	r/s (r/min)	35 (2100)
Working pressure	MPa (lbf/in ²)	20 (2900)
Dumper body		
yield point	kgf/mm ²	110
breaking point	kgf/mm ²	130
hardness	HB	360-440
Plate thickness		
front and sides	mm (in)	10 (0,375)
bottom	mm (in)	20 (0,75)



SERVICE REFILL CAPACITIES

Engine oil incl. filter,	dm ³ l (USgal)	32,5 (8,6)
total at change	dm ³ l (USgal)	28 (7,4)
Fuel tank	dm ³ l (USgal)	65 (17,2)
Cooling system	dm ³ l (USgal)	415 (109,6)
Gear box	dm ³ l (USgal)	42 (11,1)
total at change	dm ³ l (USgal)	30 (7,9)
Drive axle	dm ³ l (USgal)	52 (13,7)
Hydraulic system	dm ³ l (USgal)	105 (27,7)



LOAD CAPACITY

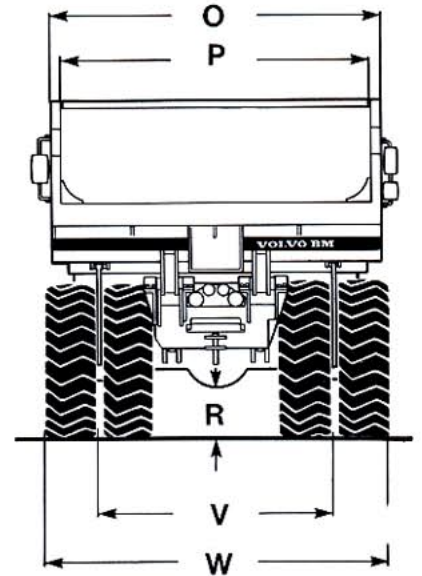
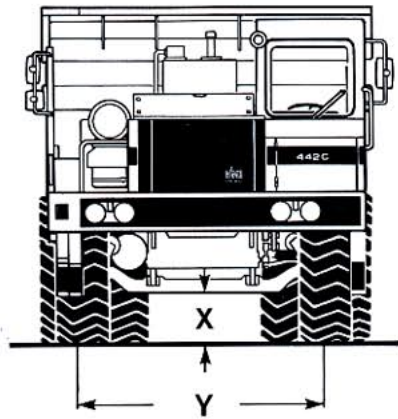
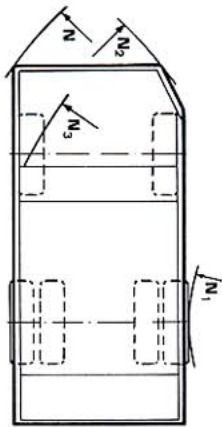
Volumes below 10 m³ are given to one decimal place. Volumes of 10 m³ or more are rounded off to the

nearest 0.5 m³.

$$\text{Load factor} = \frac{\text{Payload}}{\text{Unladen weight}} = \frac{32000}{22000} = 1.45$$

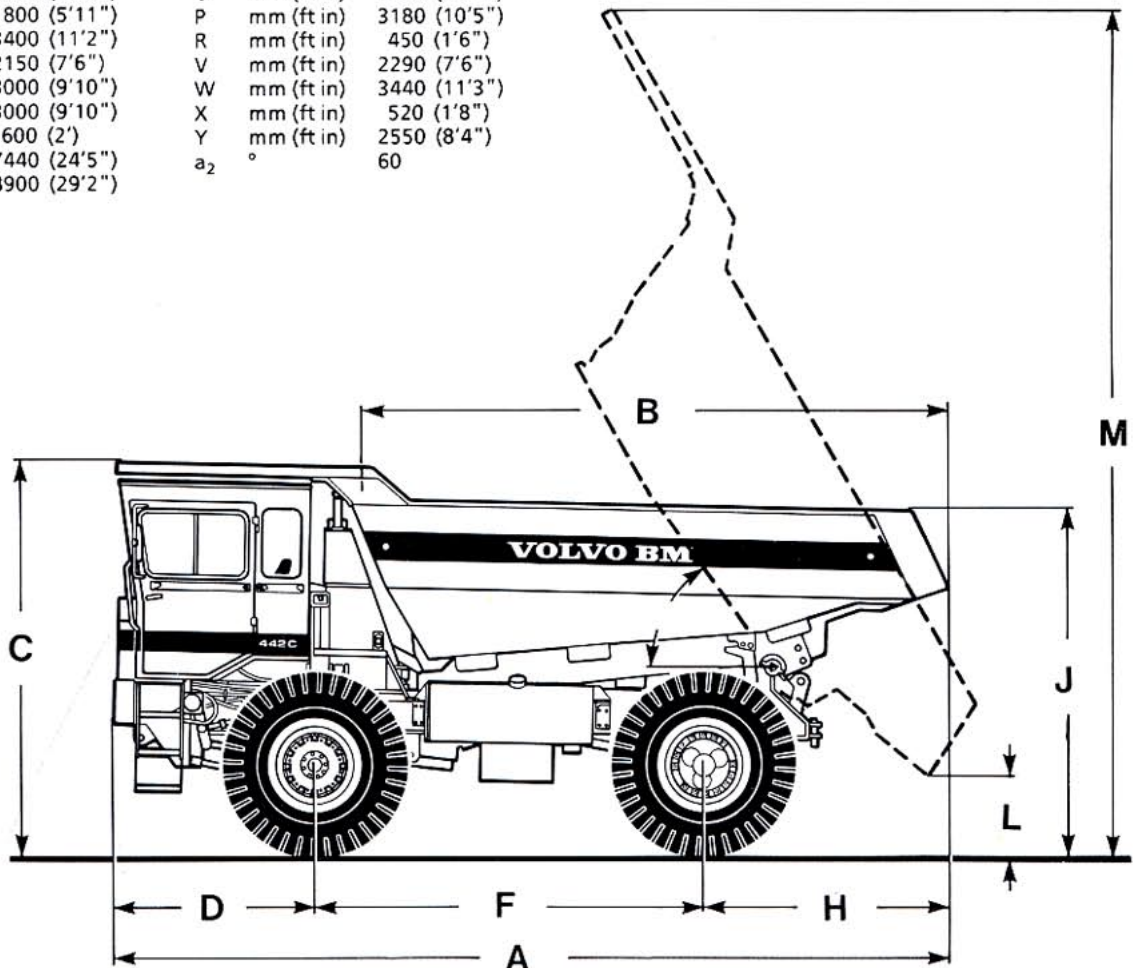
Load capacity	kg (sh tons)	3200 (35)
Load volume		
Load volume, SAE struck	m ³ (yd ³)	16,0 (20,9)
heaped, 2:1	m ³ (yd ³)	20,5 (26,8)

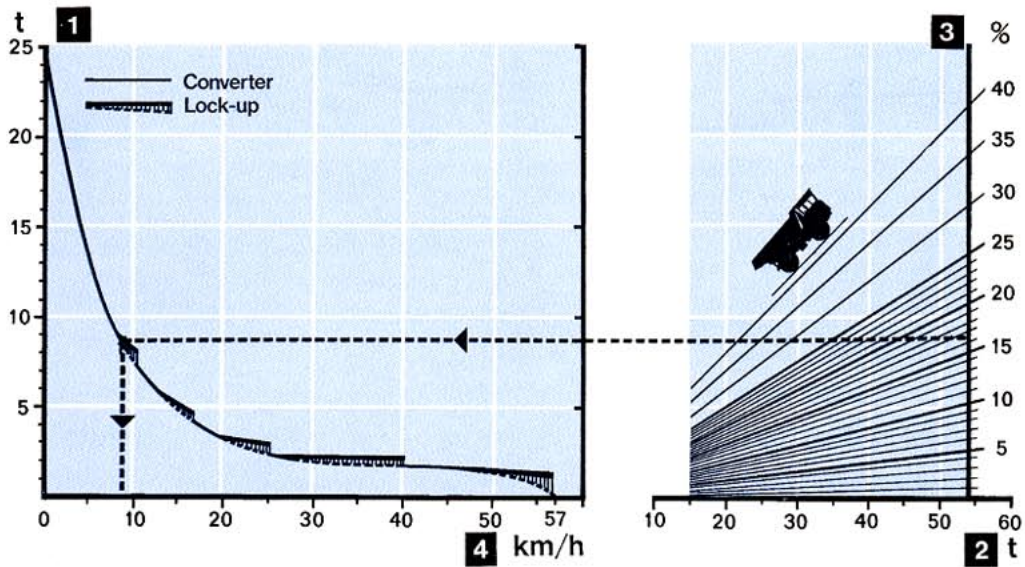
DIMENSIONS Volvo BM 442 C



* unladen
** laden

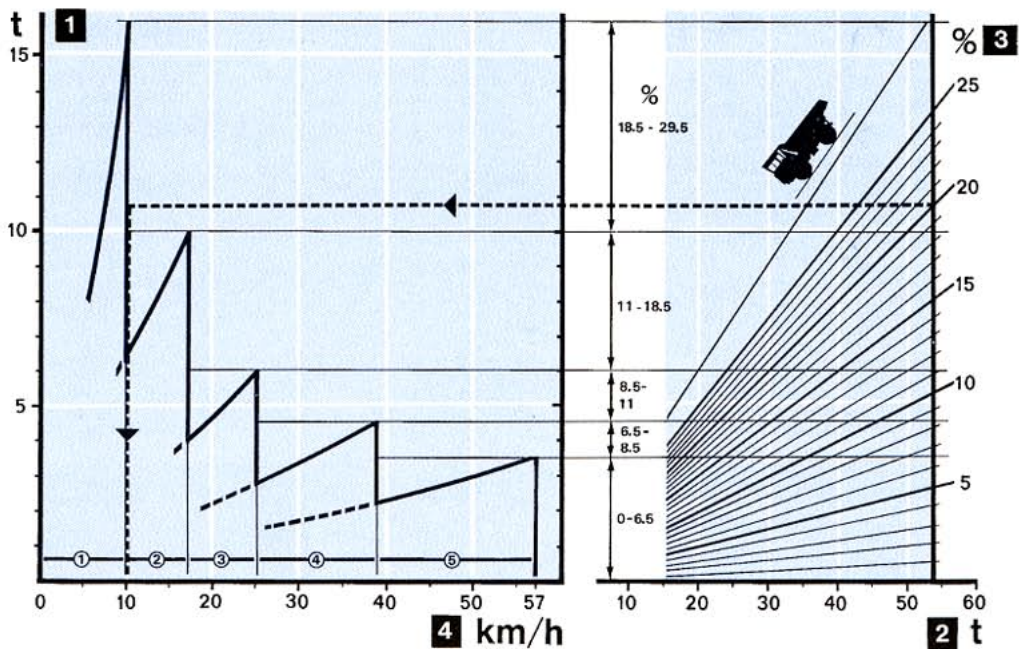
A	mm (ft in)	7350 (24'1")	N ₁	mm (ft in)	3800 (12'6")
B	mm (ft in)	5230 (17'2")	N ₂	mm (ft in)	8600 (28'3")
C*	mm (ft in)	3500 (11'6")	N ₃	mm (ft in)	7600 (24'11")
C**	mm (ft in)	3400 (11'2")	O	mm (ft in)	3405 (11'2")
D	mm (ft in)	1800 (5'11")	P	mm (ft in)	3180 (10'5")
F	mm (ft in)	3400 (11'2")	R	mm (ft in)	450 (1'6")
H	mm (ft in)	2150 (7'6")	V	mm (ft in)	2290 (7'6")
J*	mm (ft in)	3000 (9'10")	W	mm (ft in)	3440 (11'3")
J**	mm (ft in)	3000 (9'10")	X	mm (ft in)	520 (1'8")
L	mm (ft in)	600 (2')	Y	mm (ft in)	2550 (8'4")
M	mm (ft in)	7440 (24'5")	a ₂	°	60
N	mm (ft in)	8900 (29'2")			





RIMPULL GRAPH

1. Rimpull in tonnes.
 2. Vehicle weight incl., payload in tonnes.
 3. Inclination resistance + rolling resistance in %.
 4. Running speed in km/h.
- Broken line shows max. load.



BRAKING FORCE GRAPH (retarder and engine brake)

1. Braking force in tonnes.
 2. Vehicle weight incl. payload in tonnes.
 3. Inclination resistance - rolling resistance in %.
 4. Running speed in km/h.
- Broken line shows max. load.

STANDARD EQUIPMENT

Safety & Comfort

Cab heating with filtered fresh air intake and defroster
Ergonomically designed, adjustable driver's seat
Windshield wipers
Windshield washers
Rear-view mirrors
Sun visor
Lab belt
Cigarette lighter and ashtray
Tinted glass
Horn
Lights:
headlights, bright/dim/asymmetric parking lights
reversing lights

direction indicators
brake lights
tail lights
cab lights
instrument lighting
Indicator for air cleaner
Completely tyre inflation kit
Speedometer
Tachometer
Anti-theft lock
Hazard flashers
Rock ejectors
Compressed air outlet
Buzzer for pneumatic system
Hand throttle
Silencer
Tool-kit

Engine & Electrical System

Alternator
Pilot lamps for:
parking brake
bright lights
flashers
charging
engine oil pressure body up
lock-up
engine pre-heater
LED lights, switches
Instruments:
hour counter
air pressure gauge (two circuits)
engine oil pressure gauge
coolant temperature gauge
gearbox oil pressure gauge
gearbox oil temperature gauge
tachometer
speedometer
fuel gauge

Transmission

Torque converter
Automatic gearbox
Automatic lock-up

Body equipment

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

OPTIONAL EQUIPMENT (Standard equipment on certain markets)

Engine

Electric engine preheater

Electrical equipment

Back-up alarm

Transmission

Gearbox heater

Cab

Tachograph
Air conditioning

Passenger compartment heater

Heated driver's seat
Radio/tape player

External equipment

Heated rearview mirrors

Protective equipment

Collision guards around tanks
Emergency steering

Body

Rubberlined body
Overhurd tailgate,
std body
elevation 250 mm
Body elevation 250 mm

Other equipment

TBG equipment, West Germany
Spare rim
Spare wheel

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

Volvo BM Company

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