

Volvo BM A40

6×6



- **Engine output:**
SAE J1349 Net
295 kW (395 hp)
- **Body volume:**
22 m³ (28.7 yd³)
- **Load capacity:**
36 t (40 sh tn)

- Direct-injected, turbo-charged, intercooled Volvo low emission diesel engine.
- Fully automatic powershift transmission. High and low gear ranges.
- Hydraulic retarder as standard.
- Fully enclosed, forced-oil-cooled multiple disc brakes with external cooling.
- One longitudinal and three transverse diff-locks. All with 100% lock-up.
- Front axle with three-point suspension and effective shock absorption
- Volvo BM terrain bogie, individually oscillating axles and high ground clearance.
- Low interior noise level.
- Adjustable steering wheel.

VOLVO BM

ENGINE



Volvo 6-cylinder, inline, direct-injected, turbocharged, intercooled 4-cycle low emission diesel engine with overhead valves and wet replaceable cylinder linings.

Meets USA (EPA) and California off-road regulation 1996.

Fan: Hydrostatic driven, thermostatically controlled radiator fan consuming power only when needed.

Make Model			Volvo TD 122 KF	
Max power at SAE J1349 Gross	r/s	(r/min)	35	(2100)
	kW	(hp)	297	(398)
Flywheel power at SAE J1349 Net	r/s	(r/min)	35	(2100)
	kW	(hp)	295	(395)
DIN 6271*	kW	(hp)	295	(395)
Max torque at SAE J1349 Gross	r/s	(r/min)	23	(1400)
	Nm	(lbf ft)	1675	(1235)
SAE J1349 Net	Nm	(lbf ft)	1665	(1228)
DIN 6271 **	Nm	(lbf ft)	1665	(1228)
Displacement total	l	(in ³)	12	(732)
Bore	mm	(in)	130	(5.13)
Stroke	mm	(in)	150	(5.9)
Compression ratio			15:1	

*) with fan at normal speed. With fan operating at full speed, the flywheel power is 280 kW (375 hp) which corresponds to DIN 70020.

**) with fan at normal speed. With fan operating at full speed, the maximum torque is 1510 Nm (1114 lbf ft) which corresponds to DIN 70020.

ELECTRICAL SYSTEM



Voltage	V	24	
Battery capacity	Ah	2x170	
Alternator	W	1680	
Starter motor	kW (hp)	6.6	(8.9)

SERVICE REFILL CAPACITIES



Crankcase	l	(US gal)	39	(10.3)
Fuel tank	l	(US gal)	360	(95.0)
Cooling system	l	(US gal)	138	(36.4)
Transmission total	l	(US gal)	38	(10.0)
Dropbox	l	(US gal)	12	(3.2)
Hub	l	(US gal)	6	(1.6)
Front axle	l	(US gal)	40	(10.6)
First bogie axle	l	(US gal)	41	(10.8)
Second bogie axle	l	(US gal)	38	(10.0)
Brake cooling system	l	(US gal)	135	(35.7)
Brake cooling tank	l	(US gal)	100	(26.4)
Hydraulic system	l	(US gal)	260	(68.7)
Hydraulic tank	l	(US gal)	175	(46.2)

DRIVETRAIN



Torque converter: Single stage with free wheeling stator and automatic lock-up in all ranges.

Transmission: Fully automatic planetary transmission with 6 gears forward and 2 in reverse.

Dropbox: Volvo BM with 2-stage design, power take-off and differential with lock-up function.

Axes: Volvo BM. 6-wheel drive. All axles have transversal diff-locks with 100% lock-up and fully floating axle shafts with planetary type hub reductions.

Differential locks: One longitudinal and three transverse. All with 100% lock-up.

Torque converter		2.08:1
Transmission	Volvo BM	PT 1760
Dropbox	Volvo BM	FL 802
Axes	Volvo BM	AHW 70

Speeds with tyres 29.5 R 25

Low gear forward	1	km/h (mile/h)	5.9	(3.7)
	2	km/h (mile/h)	8.6	(5.3)
	3	km/h (mile/h)	15.4	(9.6)
	4	km/h (mile/h)	22.4	(13.9)
	5	km/h (mile/h)	28.4	(17.6)
	6	km/h (mile/h)	37.7	(23.4)
High gear forward	1	km/h (mile/h)	8.3	(5.2)
	2	km/h (mile/h)	12.0	(7.4)
	3	km/h (mile/h)	21.6	(13.4)
	4	km/h (mile/h)	31.2	(19.4)
	5	km/h (mile/h)	39.7	(24.7)
	6	km/h (mile/h)	52.6	(32.7)
Low gear reverse	1	km/h (mile/h)	9.5	(5.9)
	2	km/h (mile/h)	13.3	(8.3)
High gear reverse	1	km/h (mile/h)	7.7	(4.8)
	2	km/h (mile/h)	13.3	(8.3)

SUSPENSION



VOLVO BM SUSPENSION SYSTEM

Front axle: One rubber spring with bottoming absorption on each side. Stabilizer. Three shock absorbers on each side. The front axle is suspended at three points, which results in oscillation needed in rough terrain.

Bogie: Volvo BM's unique terrain bogie, which permits individual oscillation between the axles.

BRAKE SYSTEM



Fully hydraulic brakes with enclosed, forced-oil-cooled multiple discs on all axles. Two circuits. Separate brake cooling for each axle. Comply with ISO 3450 and SAE J1473 at total machine weight.

Circuit Division: One for front axle and one for bogie axles.

Parking brake: Spring-applied, air-released disc brake on the propeller shaft, designed to hold a loaded machine on a grade up to 18%. When the parking brake is applied, the longitudinal differential is locked. Compressor: Gear-driven by engine transmission.

Retarder: Hydraulic, infinitely variable, integrated in transmission.

For retarding capability incl. retarder, exhaust brake and engine, see graph on page 4.

HYDRAULIC SYSTEM



Pumps: Four engine-dependent, variable piston pumps mounted on flywheel power take-offs.

Filtration: Through two paper filters with magnetic cores.

Pump capacity per pump	l/min	(US gal/min)	110	(29.0)
at shaft speed	r/s	(r/min)	42	(2550)
Working pressure	MPa	(psi)	21	(3040)

CAB



Volvo BM cab, tested and approved according to ROPS standard ISO/3471 and SAE J1040/APR 88. Mounted on rubber pads which effectively reduces vibrations. Adjustable steering wheel. Radio/Contronic console in ceiling.

Heater and defroster: Filtered air and pressurized cab.

Operator's seat: Flameproof upholstery. Extra seat for trainer.

Number of exits	2
Internal sound level acc. to ISO 6394 and at max. speed	dB (A) 76

STEERING SYSTEM



Hydromechanical articulated steering. 3.4 lock-to-lock turns.

Cylinders: Two double-acting steering cylinders.

Supplementary steering: Complies with ISO 5010 at total machine weight.

Steering angle: $\pm 45^\circ$

BODY



Body: Hardened and tempered steel body with high impact strength.

Cylinders: Two single stage, double-acting.

Tipping angle	°	71
Tipping time with load	s	15
Lowering time	s	12
Body, plate thickness		
Sides	mm (in)	12 (0.47)
Bottom/chute	mm (in)	16 (0.63)
Headboard	mm (in)	8 (0.31)
Beams	mm (in)	10 (0.39)
Yield strength	N/mm ² (psi)	1000 (145000)
Tensile strength	N/mm ² (psi)	1250 (181000)
Hardness min.	HB	360-440

WEIGHTS



Operating weight includes all fluids and operator. Standard machine.

Operating weight:

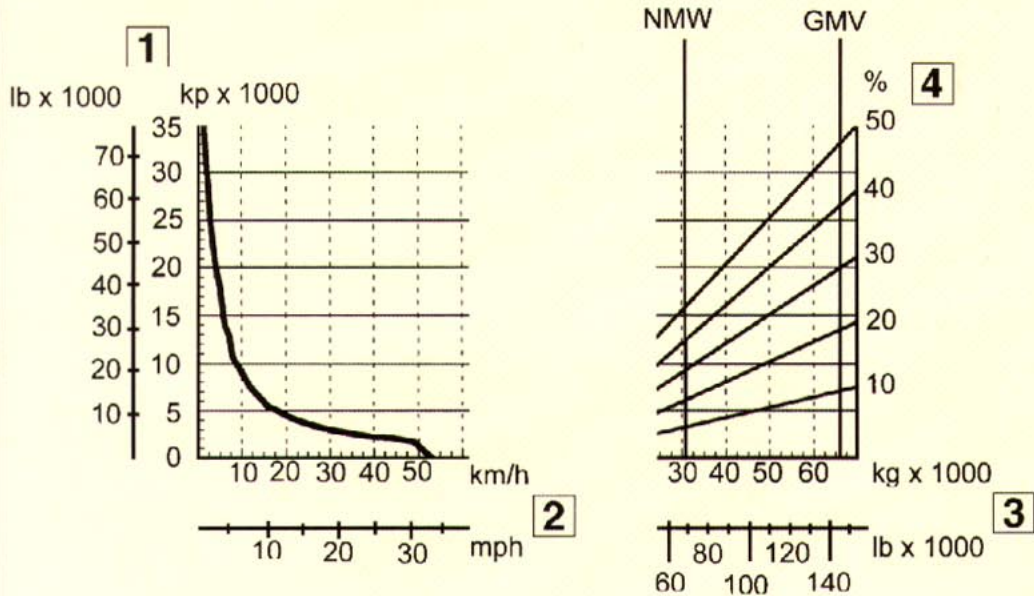
Front	kg (lb)	15200 (33520)
Rear	kg (lb)	14750 (32520)
Total	kg (lb)	29950 (66040)
Payload	kg (lb)	36000 (79380)
Total weight		
Front	kg (lb)	18100 (39910)
Rear	kg (lb)	47850 (105510)
Total	kg (lb)	65950 (145420)

GROUND PRESSURE



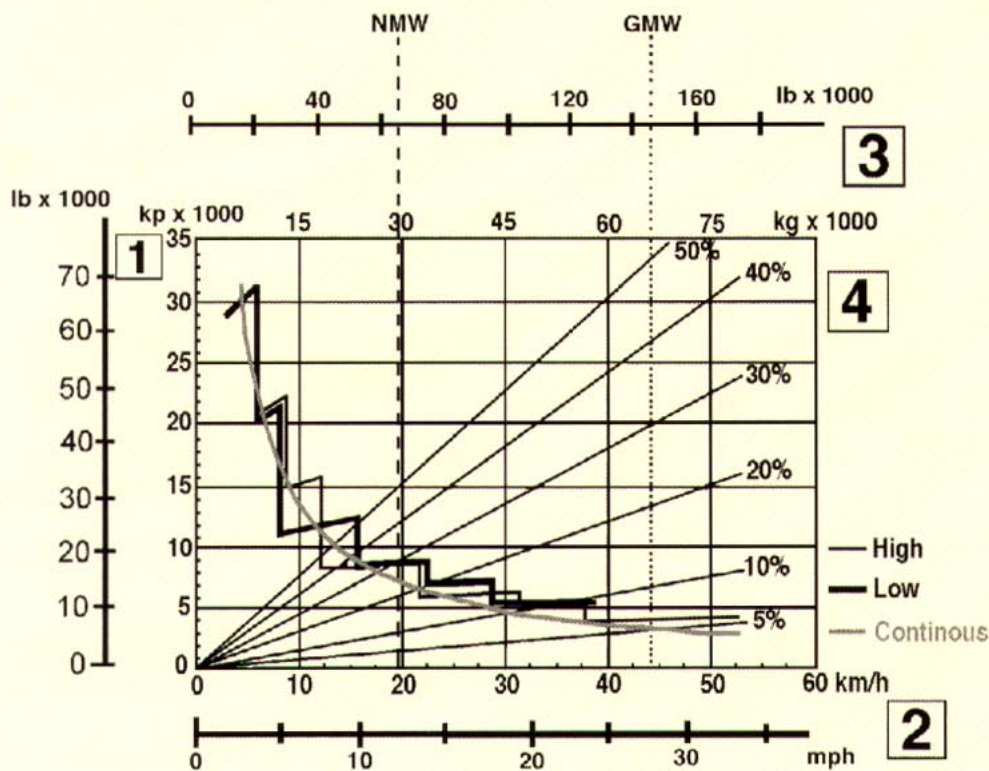
At 15% sinkage of unloaded radius and specified weights.

Unloaded			
Front	kPa (psi)	106 (15.3)	
Rear	kPa (psi)	51 (7.4)	
Loaded			
Front	kPa (psi)	127 (18.4)	
Rear	kPa (psi)	168 (24.4)	



RIMPULL

- 1 Rimpull in kp (lbf)
- 2 Speed in km/h (mile/h)
- 3 Machine weight in kg (lb)
- 4 Grade in % + rolling resistance in %.



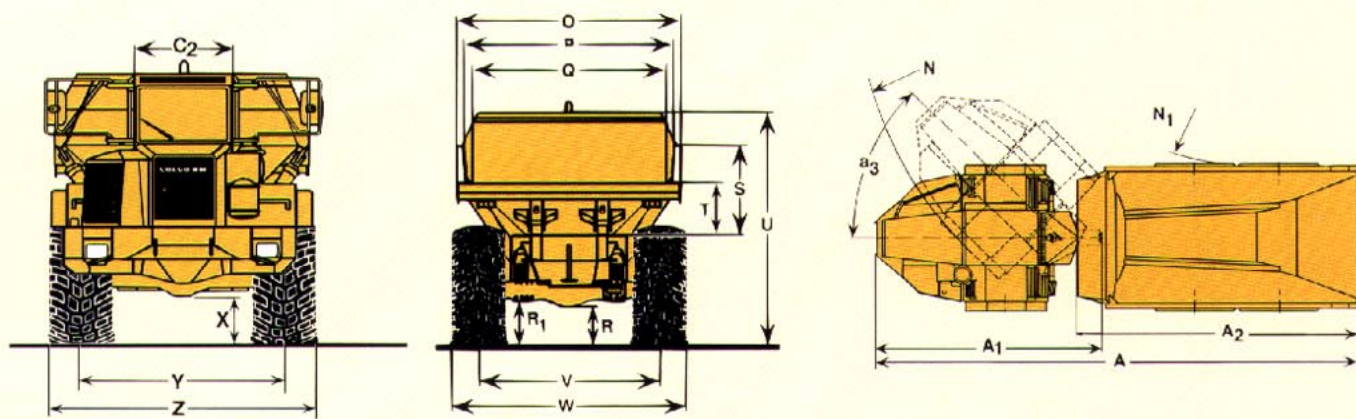
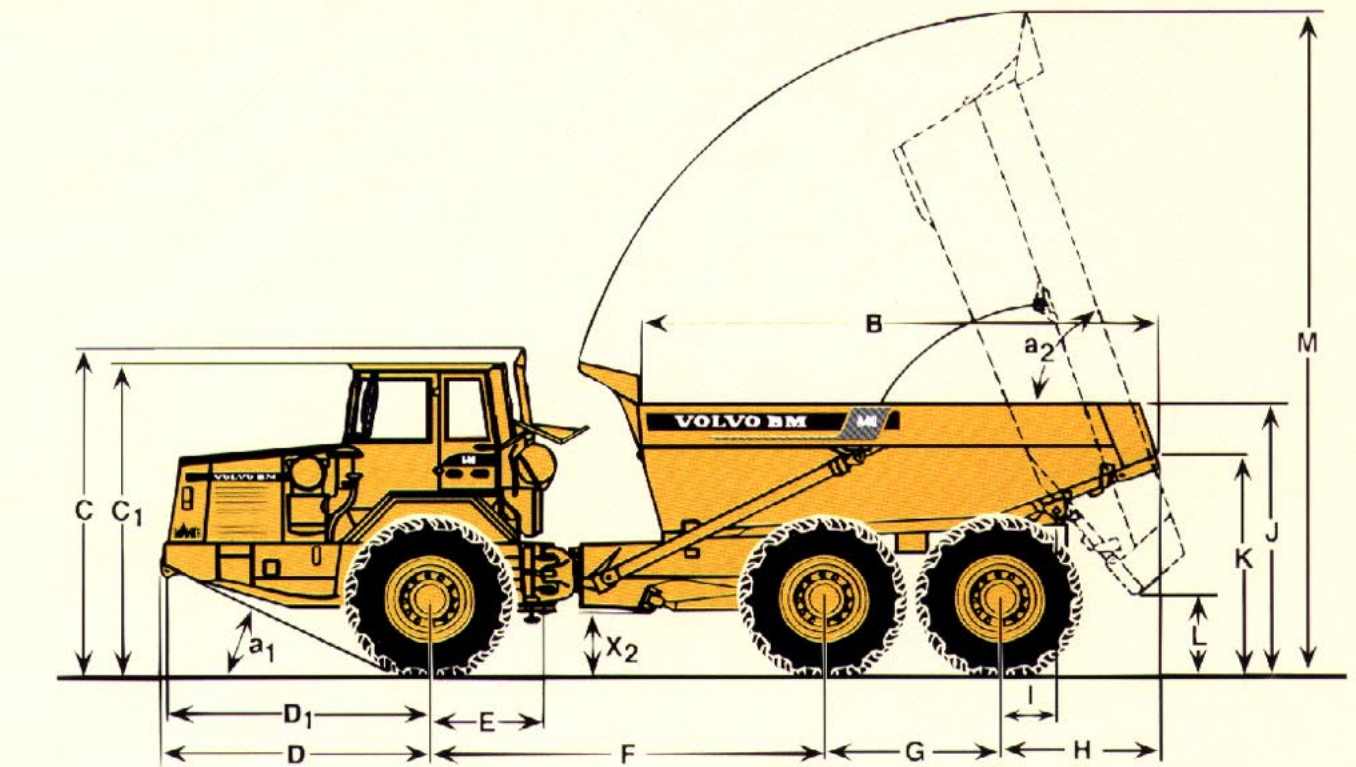
RETARDATION PERFORMANCE

- 1 Braking effort in kp (lbf)
- 2 Speed in km/h (mile/h)
- 3 Machine weight in kg (lb)
- 4 Grade in % - rolling resistance in %

INSTRUCTIONS

Diagonal lines represent total resistance (grade % **plus** rolling resistance %).
Charts based on 0% rolling resistance, standard tyres and gearing, unless otherwise stated.

- A. Find the diagonal line with the appropriate total resistance on the right-hand edge of the chart.
- B. Follow the diagonal line downward until it intersects the actual machine weight line, NMW or GMW.
- C. Draw a new line horizontally to the left from the point of intersection until the new line intersects the rimpull or retardation curve.
- D. Read down for vehicle speed.



DIMENSIONS Volvo BM A40 6x6 (unloaded with 29.5 R 25 tyres)

A	mm (ft in)	11135 (36'6")	F	mm (ft in)	4442 (14'7")	N ₁	mm (ft in)	4238 (13'11")	V	mm (ft in)	2636 (8'8")
A ₁	mm (ft in)	5246 (17'3")	G	mm (ft in)	1940 (6'4")	O	mm (ft in)	3290 (10'9")	W	mm (ft in)	3430 (11'3")
A ₂	mm (ft in)	6525 (21'5")	H	mm (ft in)	1793 (5'11")	P	mm (ft in)	3059 (10')	X	mm (ft in)	618 (2')
B	mm (ft in)	5738 (18'10")	I	mm (ft in)	643 (2'1")	Q	mm (ft in)	2853 (9'4")	X ₁	mm (ft in)	645 (2'1")
C	mm (ft in)	3701 (12'2")	J	mm (ft in)	3055 (10'1")	R	mm (ft in)	657 (2'2")	X ₂	mm (ft in)	764 (2'6")
C ₁	mm (ft in)	3558 (11'8")	K	mm (ft in)	2510 (8'3")	R ₁	mm (ft in)	754 (2'6")	Y	mm (ft in)	2636 (8'8")
C ₂	mm (ft in)	1331 (4'4")	L	mm (ft in)	961 (3'2")	S	mm (ft in)	1379 (4'6")	Z	mm (ft in)	3430 (11'3")
D	mm (ft in)	2960 (9'9")	M	mm (ft in)	7491 (24'7")	T	mm (ft in)	834 (2'9")	a ₁	°	27
D ₁	mm (ft in)	2920 (9'7")	N	mm (ft in)	8827 (28'11")	U	mm (ft in)	3498 (11'6")	a ₂	°	71
E	mm (ft in)	1270 (4'2")							a ₃	°	45

LOAD CAPACITY (Body volumes according to SAE 2:1)

Load capacity	kg	(sh tn)	36000	(40)
Body, struck	m ³	(yd ³)	16.3	(21.3)
heaped	m ³	(yd ³)	22	(28.7)

STANDARD EQUIPMENT

Safety and comfort

ROPS cab
 Cab heater with filtered fresh air and defroster.
 Ergonomically designed and adjustable operator's seat
 Windshield wipers
 Windshield washers
 Rear view mirrors
 Sun-visor
 Seat belt
 Anti-slip material on hood and fenders
 Cigarette lighter
 Ashtray
 Horn
 Protective grille for rear window
 Hazard flashers
 Tinted glass
 Lights:
 headlights, main/dipped
 parking lights
 direction indicators
 rear lights
 back-up lights
 brake lights
 cab lighting
 instrument lighting

Adjustable steering wheel
 Steering joint locking assembly
 Radio/Contronic console in ceiling
 Speedometer
 Secondary steering

Engine and electrical system

Turbocharger
 Oil drainage hose
 Alternator
 Preheating
 Battery disconnect switch
 Electrical outlet
 Gauges for:
 air pressure
 engine temperature
 engine revs
 fuel
 hours
 transmission oil temperature
 Pilot lamps for:
 bogie axles diff-lock
 direction indicators
 front axle diff-lock
 longitudinal diff-lock
 lights
 main beam
 preheating
 service brake

Warning lamps for:
 air filter
 battery charging
 body up
 brake pressure
 brake cooling-oil level
 coolant level
 dropbox oil level
 engine oil pressure
 engine temperature
 engine-dependent pump
 ground-dependent pump
 parking brake
 radiator fan
 transmission temperature
 Central warning:
 air pressure
 battery charging
 brake cooling-oil level
 dropbox oil level
 engine oil pressure
 engine overspeed
 engine temperature
 steering function
 transmission temperature

Drivetrain

Torque converter
 Automatic transmission
 Drop box with high/low range
 Automatic lock-up
 Hydraulic variable retarder
 Longitudinal diff-lock
 Differential lock front axle
 Differential lock first bogie axle
 Differential lock second bogie axle

Body

Body with exhaust ducts

Tyres

Front: 29.5R25
 Rear: 29.5R25

OPTIONAL EQUIPMENT

Service and Maintenance

Tool kit with tyre inflation unit

Engine

Oil-bath aircleaner

Electrical

Work lights, roof-mounted
 Rotating beacon

Cab

Airsuspended, electrically heated operator's seat
 Electrically heated rear-view mirrors
 Air conditioning
 Contronic display

Protection

Overhead guards, FOPS
 Mudguards on front of body

Body

Extra front spillguard
 Body heating
 Overhung tailgate
 Wear plates, kit delivery

Under our policy of continual 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.

VME Articulated Haulers AB

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