

VOLVO BM

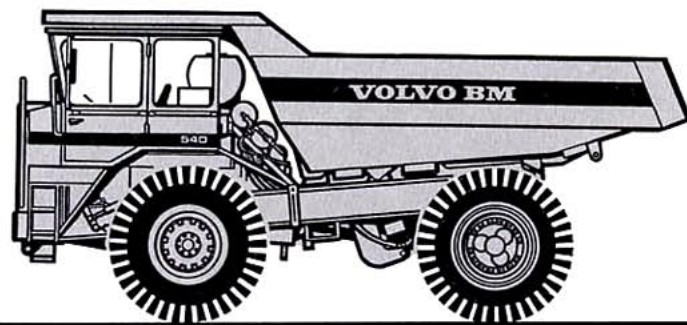
540



VOLVO BM 540 - LIGHT MACHINE HEAVY LOADS

The 540 is a cost-effective 40 tonner in Volvo BM's very modern range of rigid dumptrucks. They are powerful haulage machines with the capacity for carrying large loads. The success of these impressive trucks is due to carefully engineered design, skilled production techniques and the use of high quality materials.

These features, together with a safe and comfortable cab, make the Volvo BM 540 a highly competitive loadcarrier offering optimum power, quality and economy.



Features and benefits

- High payload/low tare weight - extra capacity.
- Rock body as standard - low maintenance requirements.
- Driver comfort and safety - increased driver efficiency.
- Easy access for servicing - more time on the job.



LIGHT MACHINE - HEAVY LOADS

In the 540 we have combined very low tare weight with very high payload capacity. The vehicle's high load factor - 1,41 - means that the truck takes a payload of 1,41 tonnes per ton of tare weight, and this is achieved mainly by design of the frame and the rock body.

Using advanced computer-aided design techniques we have determined all the static and dynamic stresses: we have modified, retested and finally achieved the current low-weight, high-strength design.

ROCK BODY AS STANDARD

The new design of the rock body, using a particularly high quality steel plate, has meant that, although the body is lighter, it still meets the material requirements for wear resistance (HB 360) and strength (110 kg/mm²). Stress concentrations are eliminated and therefore also the risk of cracking.

Low load profile

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

Rubber Body (optional)

The rubber body offers a number of important additional benefits: - a further increase in payload capacity, a reduction of stress to truck and driver because the rubber absorbs shocks during loading and transportation over rough ground, less wear and tear from abrasive materials and a reduction in environmental noise.



EXEMPLARY WORKING ENVIRONMENT

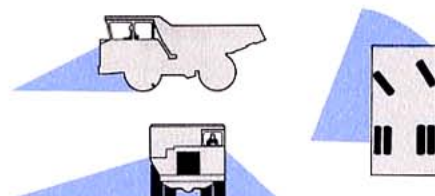
The driver has excellent visibility from his driving position, with a clear view across the full width of the truck.

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 sprung and damped and is fitted with armrests. The cab is snug, with linings of soft, cushioning material.

Eminently driveable

The 540 is easy to drive. It is agile and efficient both on poor surfaces and on steep gradients. It is also fast - 65km/h - on a level road.





ENGINE

Scania DSI 14, 4-stroke direct-injected diesel engine with intercooler.

Cold starter: Cold starter on injection pump

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

Radiator fan: Sunction fan mounted on engine

Max. rating at	r/s	(r/min)	35	(2100)
SAE J 1349	kW	(hp)	322	(438)
Flywheel rating at	r/s	(r/min)	35	(2100)
DIN 70020	kW	(hp)	302	(410)
Max. torque at	r/s	(r/min)	20	(1200)
SAE J 1349	Nm	(lbf ft)	1695	(1250)
DIN 70020	Nm	(lbf ft)	1588	(1171)
No. of cylinders			8	
Displacement	l	(in ³)	14,2	(866,5)
Bore	mm	(in)	127	(5,0)
Stroke	mm	(in)	140	(5,51)
Compression ratio			15,1:1	

Alternative engine

Cummins KT 1150 C 450, 4-stroke direct-injected turbocharged engine

Max. rating at	r/s	(r/min)	35	(2100)
SAE J 1349	kW	(hp)	335	(456)
DIN 70020	kW	(hp)	315	(428)
Max. torque at	r/s	(r/min)	25	(1500)
SAE J 1349	Nm	(lbf ft)	1825	(1346)
DIN 70020	Nm	(lbf ft)	1714	(1264)
No. of cylinders			6	
Bore	l	(in ³)	159	(6,26)
Displacement	mm	(in)	18,9	(854,3)
Compression ratio			15,5:1	

Alternative engine

Detroit Diesel 12 V 71 TT, 4-stroke direct-injected turbocharged engine

Max. rating at	r/s	(r/min)	35	(2100)
SAE J 1349	kW	(hp)	335	(456)
DIN 70020	kW	(hp)	315	(428)
Max. torque at	r/s	(r/min)	23,3	(1400)
SAE J 1349	Nm	(lbf ft)	1988	(1466)
DIN 70020	Nm	(lbf ft)	1867	(1377)
No. of cylinders			12	
Bore	l	(in ³)	108	(4,25)
Displacement	mm	(in)	13,9	(854,3)
Compression ratio			17:1	



ELECTRICAL SYSTEM

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

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

Batteries: Two 12V batteries connected in series.

Voltage	V	24	
Battery capacity	Ah	160	
Alternator	A	850	
Starter motor	kW	(hp)	5,5 (7,5)



DRIVE TRAIN

Torque converter: Integral with transmission with automatic lock-up in all ranges.

Transmission: Power-shift transmission with built-in retarder

Axles: Fully floating drive axle with planetary hub reduction.

Torque converter	Allison		
	TC 690		
Torque multiplication	2,56:1		
Transmission	Allison		
	CLBT 5962		
Speeds			
Gear	1	km/h (mile/h)	11 (6,8)
	2	km/h (mile/h)	16 (9,9)
	3	km/h (mile/h)	22 (13,7)
	4	km/h (mile/h)	32 (19,9)
	5	km/h (mile/h)	44 (27,3)
	6	km/h (mile/h)	65 (40,4)
Reverse		km/h (mile/h)	9 (5,6)
Reduction			
Gear1	1		4,00
	2		2,68
	3		2,01
	4		1,35
	5		1,00
	6		0,67
Reverse			5,12
Total reduction/ drive axle			15,65:1
Tyres			18.00-33/32 E3
Rim			13.00-33



FRAME

Welded box beams which run from front bumper to rear axle with a minimum of intermediate joints and crossbeams.



SUSPENSION

Same suspension on all four wheels.

Front axle: Welded box beam carried in

hydropneumatic suspension units

Rear axle: Cast steel axle bridge carried in hydropneumatic suspension units.



BRAKES

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

Parking brake: Spring-actuated drum brakes on allwheels

Circuit division: Circuit 1 supplies the front brakes. Circuit 2 supplies the rear brakes

Compressor capacity	l /min		919	
	(US gal/ min)			(242)
at	r/s	(r/min)	40	(2400)
Pressure regulator				
Actuate	bar	(psi)	6,6	(94)
Relief	bar	(psi)	7,6	(108)
Brake area				
front/ wheel	cm ²	(in ²)	1770	(275)
rear/ wheel	cm ²	(in ²)	1770	(275)
Reservoirs	st		3	
Total volume	l	(ft ³)	140	(4,94)
Parking brake area	cm ²	(in ²)	7080	(1097)
Retarder				
braking effect	kW	(hp)	7080	(1097)
at	r/s	(r/min)	35	(2100)



HOIST AND BODY

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

Tipping stop: Rubber buffers.

Hydraulic system: The gear pump is fitted on the transmission and cuts in automatically when the body is to be tipped.

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

Optional equipment:

540 can be equipped with rubber body.

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		12	
Lowering time	s		12	
Hydraulic system				
Flow rate	l /min		4,0	
	(US gal /min)			(63,4)
and speed	r/s	(r/min)	40	(2400)
Working pressure	MPa	(psi)	20	(200)
Dumper body				
breaking point	N/mm ²		1250	
hardness	HB		360-440	
Plate thickness				
front and sides	mm	(in)	10	(0,375)
bottom	mm	(in)	20	(0,75)



STEERING SYSTEM

Hydraulic ZF-power steering with mechanical return. 1-double-acting steering cylinder. 3,5

lock-to-lock turns.

Hydraulic pump: Gear pump, driven directly from engine

Steering cylinder				
Diameter	mm	(in)	100	(3,94)
Stroke	mm	(in)	500	(19,69)
Piston rod diameter	mm	(in)	40	(1,57)
Flow rate	l / min		217	
	(US gal /min)			(57,3)
at	r /s	(r /min)	42,3	(2540)
Working pressure	MPa	(psi)	15	(2175)



WEIGHTS

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

Dumper body weight	kg	(lb)	7000	(15435)
Service weight				
front axle	kg	(lb)	13400	(29550)
rear axle	kg	(lb)	12400	(27350)
total	kg	(lb)	25800	(56900)
Payload				
front axle	kg	(lb)	6800	(15000)
rear axle	kg	(lb)	29500	(65050)
total	kg	(lb)	36300	(80050)
Gross weight				
front axle	kg	(lb)	20200	(44550)
rear axle	kg	(lb)	41900	(92400)
total	kg	(lb)	62100	(136950)



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.

Seat for passenger

Internal sound level	dB(A)	80
Driver's seat		ISRI 5000
Numer of exits		2



LOAD CAPACITY

Volumes below 10 m³ are given to one decimal place. Volumes of 10 m³ or more are rounded off to the nearest 1,0 m³.

$$\text{Load factor} = \frac{\text{Payload}}{\text{Unladen weight}} = \frac{36300}{25800} = 1,41$$

Load capacity	kg	(sh tons)	36300	(40)
Load factor			1,41	
Load volume, struck	m ³	(yd ³)	17,0	(22,2)
Load volume, heaped, 2:1	m ³	(yd ³)	23,5	(30,7)
Load volume, rubber body	m ³	(yd ³)	23,5	(30,7)



SERVICE REFILL CAPACITIES

Engine oil incl. filter,	l	(USgal)	25	(6,6)
Fuel tank	l	(USgal)	600	(158,5)
Cooling system	l	(USgal)	100	(26,4)
Transmission	l	(USgal)	80	(21,1)
total at change	l	(USgal)	45	(11,9)
Drive axle	l	(USgal)	62	(16,4)
Hydraulic system	l	(USgal)	250	(66,1)

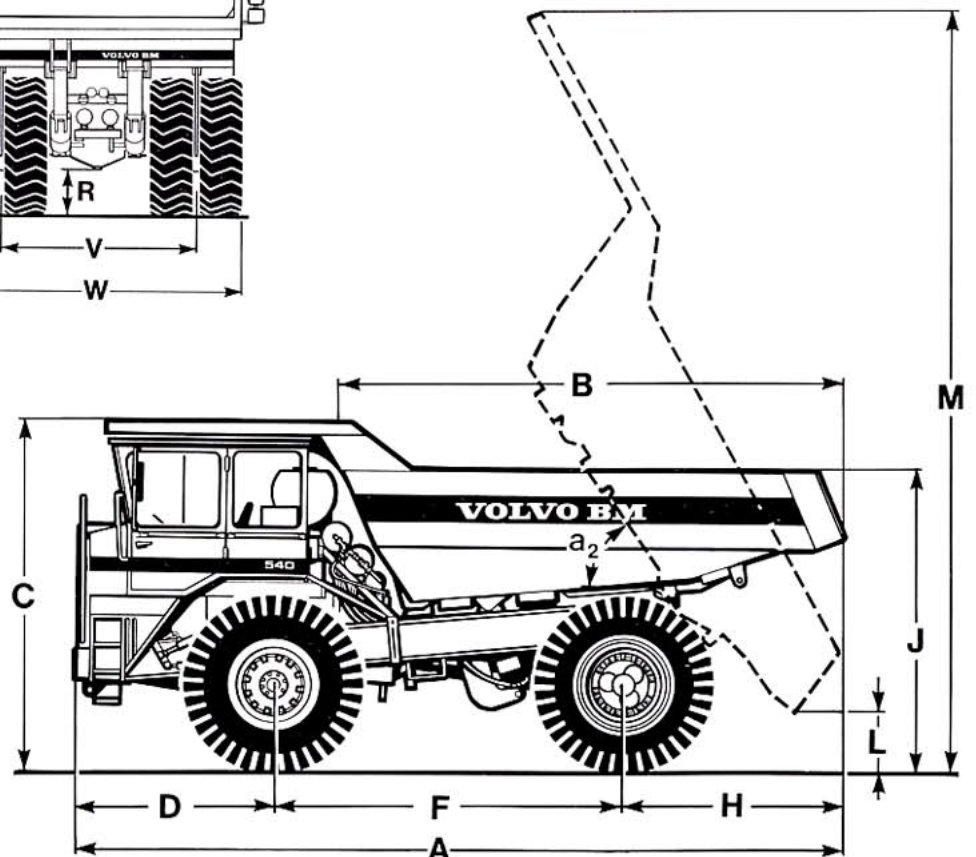
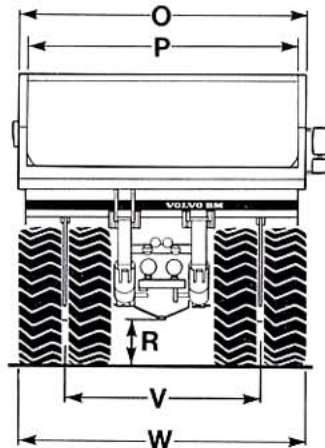
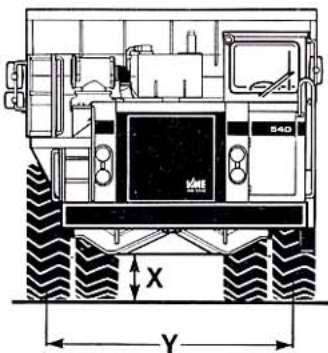
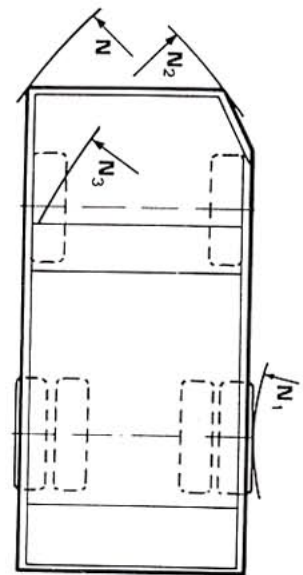
DIMENSIONS VOLVO BM 540

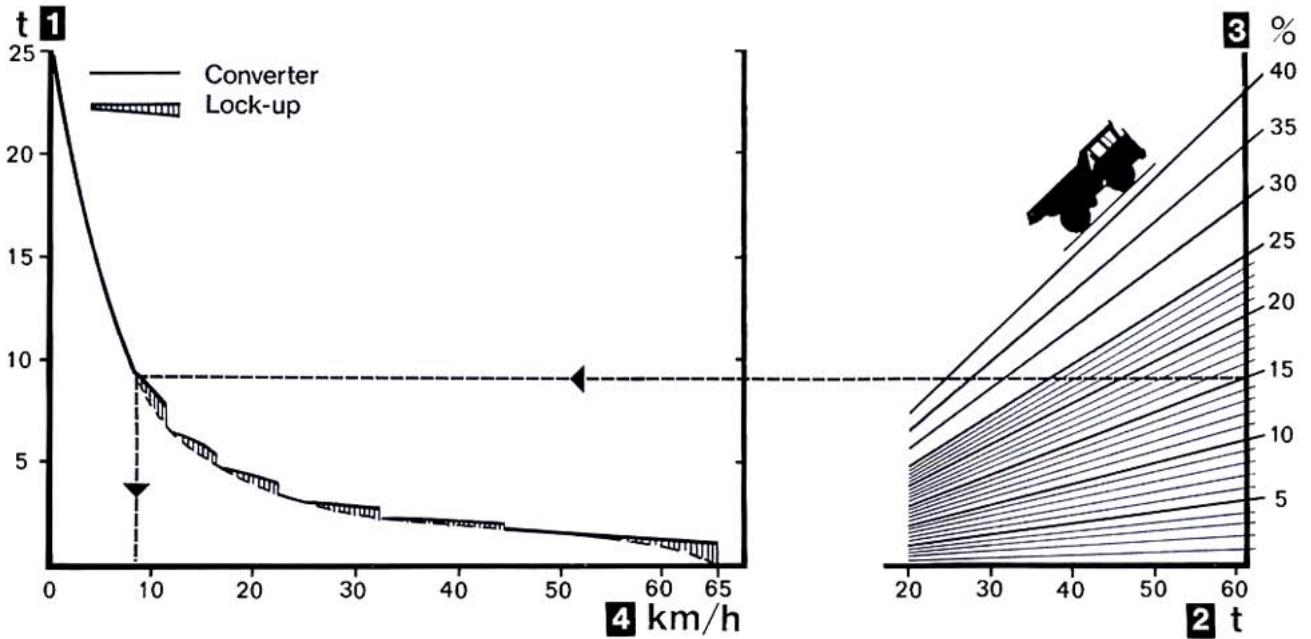
* unladen

** laden

***with rubber body

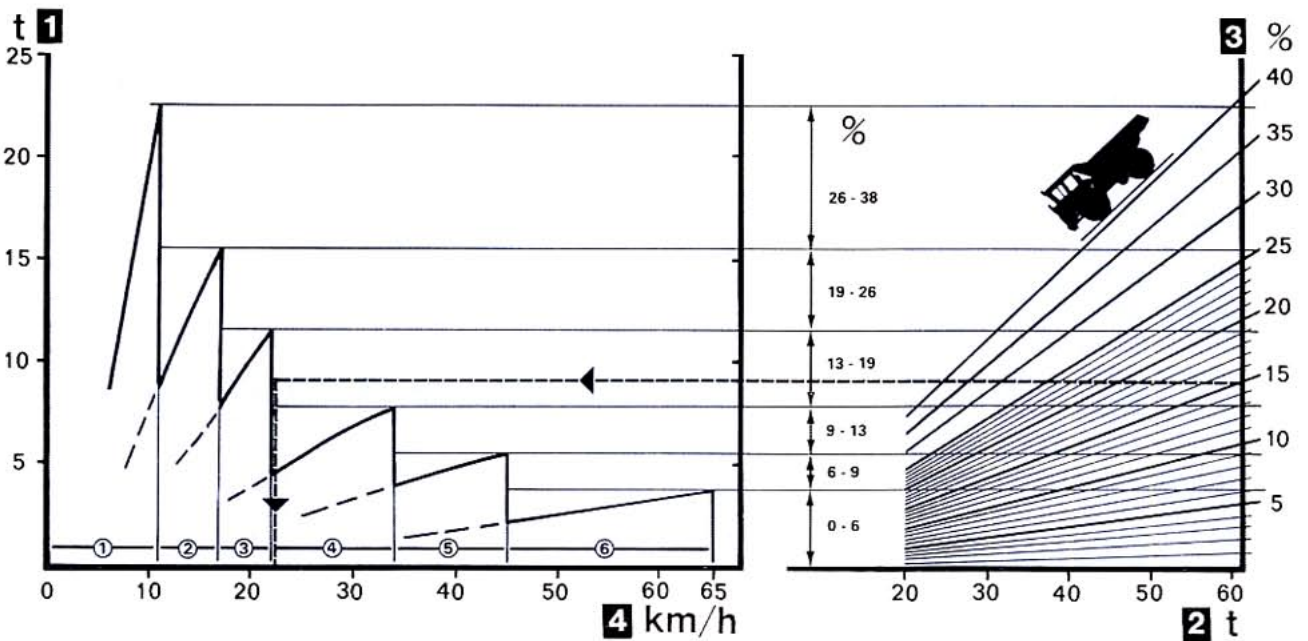
A	mm	(ft in)	8080	(26'6")	N	mm	(ft in)	9200	(30'2")
A***	mm	(ft in)	8200	(26'10")	N ₁	mm	(ft in)	3700	(12'2")
B	mm	(ft in)	5120	(16'10")	N ₂	mm	(ft in)	9000	(29'6")
C*	mm	(ft in)	3720	(12'2")	N ₃	mm	(ft in)	8000	(26'3")
C**	mm	(ft in)	3690	(12'1")	O	mm	(ft in)	3730	(12'3")
D	mm	(ft in)	2070	(6'10")	O***	mm	(ft in)	3900	(12'9")
F	mm	(ft in)	3650	(12')	P	mm	(ft in)	3500	(11'6")
H	mm	(ft in)	2360	(7'9")	R	mm	(ft in)	530	(1'9")
J*	mm	(ft in)	3160	(10'4")	V	mm	(ft in)	2480	(8'2")
J**	mm	(ft in)	3050	(10')	W	mm	(ft in)	3600	(11'10")
L	mm	(ft in)	550	(1'10")	X	mm	(ft in)	560	(1'10")
M	mm	(ft in)	7860	(25'9")	Y	mm	(ft in)	3050	(10')
					a ₂	°		55	





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
Indicator for air cleaner
Tyre inflation kit
Tool-kit
Speedometer
Tachometer
Anti-theft lock
Instructor's seat

Hazard flashers
Rock ejectors

Engine & Electrical System

Lights:
headlights,
bright/dim/asymmetric
parking lights
reversing lights
direction indicators
brake lights
tail lights
cab lights
instrument lighting
Alternator
Electric engine pre-heater

Pilot lamps for:
parking brake
bright lights
flashers
charging
engine oil pressure
body up
lock-up

Instruments:
fuel gauge
air pressure gauge (two circuits)
engine oil pressure gauge
coolant temperature gauge
oljetryck växellåda
oljetemperatur växellåda
transmission oil pressure gauge
transmission oil temperature gauge
tachometer
speedometer

Body equipment

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

Drive train

Torque converter
Automatic transmission
Automatic lock-up

OPTIONAL EQUIPMENT (Standard equipment on certain markets)

Electrical equipment

Back-up alarm

Cab

Tachograph
Air conditioning
Passenger compartment heater
Heated driver's seat
Radio/tape player

External equipment

Heated rearview mirrors
Splash guards
Safety catch for body
in tipped position

Protective equipment

Guard rings on front wheels
Emergency steering
Silencer

Body equipment

Rubber body
Rubberlined body
Overhung tailgate,
Body elevation 200 mm
Body elevation 425 mm

Other equipment

TBG equipment, West Germany
Sound suppression shield
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

S-63185 ESKILSTUNA SWEDEN

