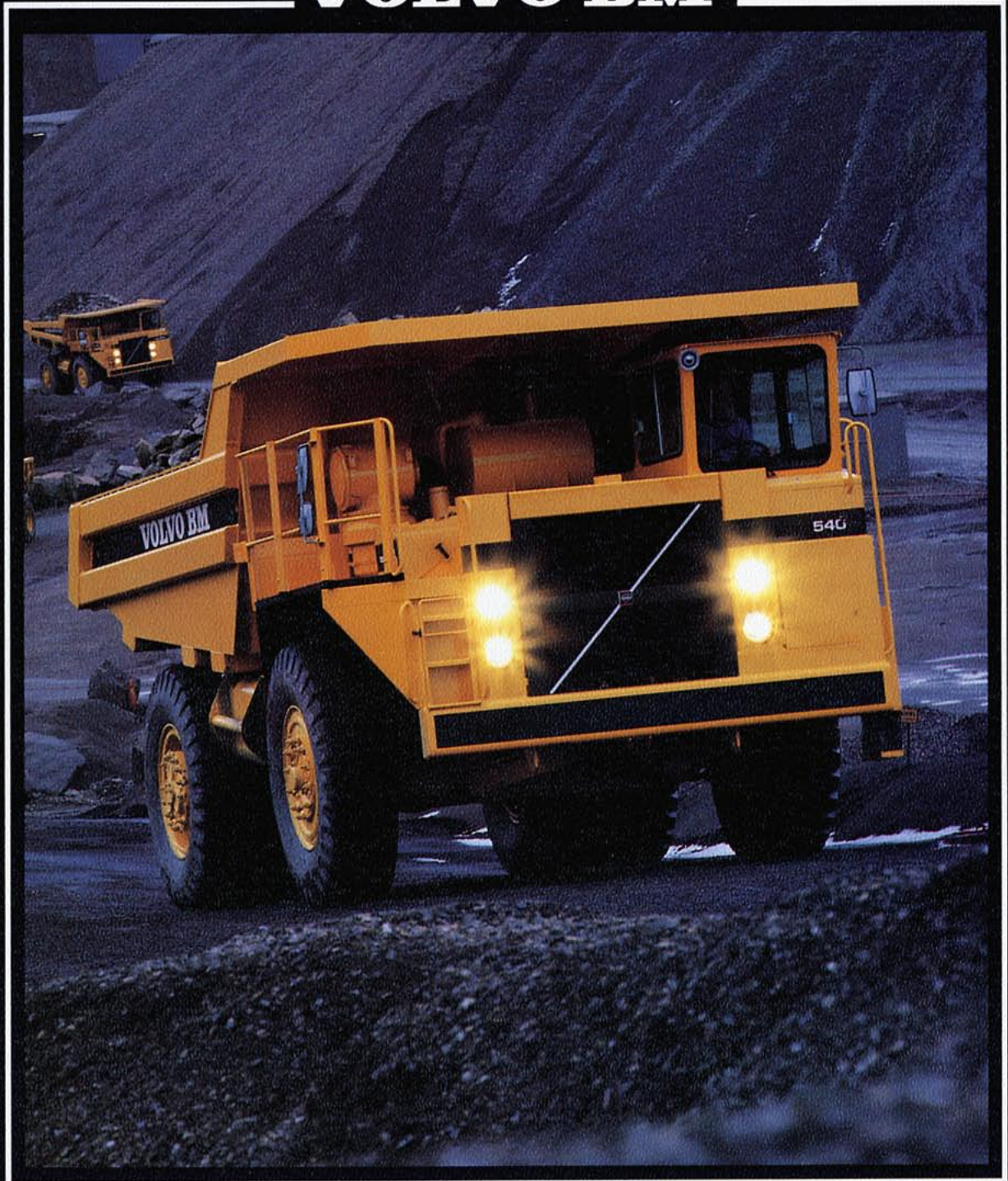


540

VOLVO BM

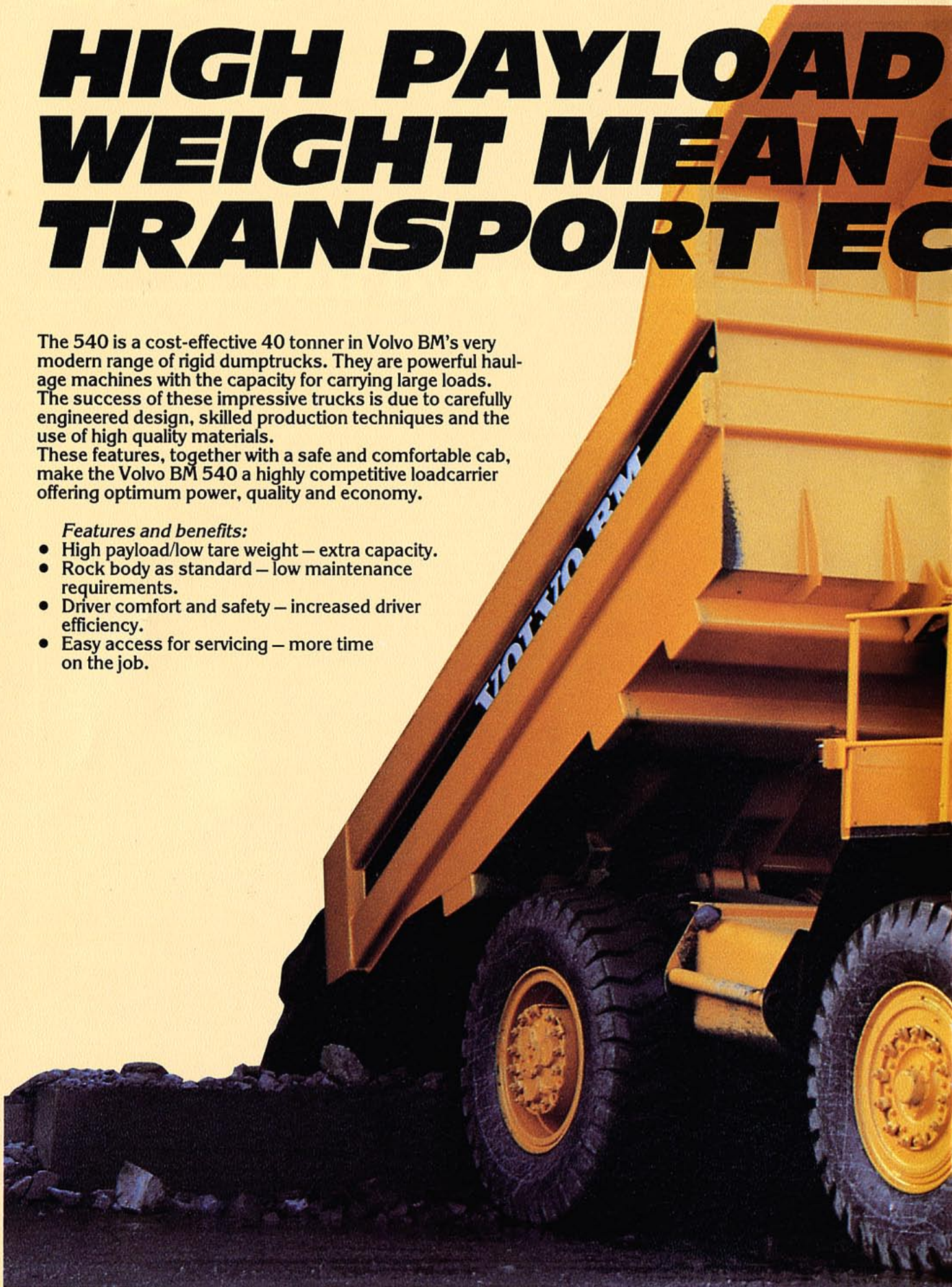


HIGH PAYLOAD WEIGHT MEAN TRANSPORT EC

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.



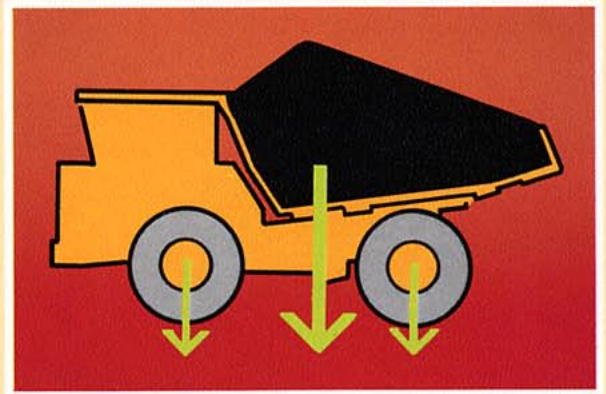
AND LOW TARE
SUPERB
ECONOMY



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 the 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.

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.

Low load profile

The design of the body has resulted in a compact, high-volume unit with 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 540 is easy to drive. It is agile and efficient both on poor surfaces and on steep gradients. It is also fast – 65 km/h – on a level road.

Power

The vehicle has a good power/weight ratio. The power shift gearbox, with torque-converter and lock-up, ensures that the power is used effectively.

Braking System

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

Steering

The steering is hydromechanical, i.e. full power steering in combination with complete mechanical coupling between the steering wheel and the road wheels. This system provides a good "feel" for the surface and sure manoeuvring, which is particularly important when driving in tunnels.



Suspension unit
Hydropneumatic
suspension units
all round.

EASY TO SERVICE



Easily accessible engine

Both engine and gearbox are easily accessible through large side panels and bonnet. Extensive standardisation means that very few tools are needed for maintenance.

Simple maintenance of the suspension units

The four hydropneumatic suspension units are identical. Their design is simple with removable end covers. No welded joints whatever.

Tightly grouped electrical system

The electrical system is based on printed circuit boards which can all be reached together in one part of the cab. This means fewer contact points, easier fault-tracing and greater reliability.



ENGINE

Standard

Scania DSI 14, 8-cylinder, 4-stroke direct-injected diesel engine with intercooler.

Gross rating	322 kW at 35 rps SAE J270 (438 hp at 2100 rpm SAE)
Flywheel rating	302 kW at 35 rps DIN 70020 (410 hp at 2100 rpm DIN)
Max. torque	1695 Nm at 20 rps SAE J270 (1251 lbf ft at 1200 rpm SAE) 1588 Nm at 20 rps DIN 70020 (1172 lbf ft at 1200 rpm DIN)
No. of cylinders	8
Bore	127 mm (5 in)
Stroke	140 mm (5.5 in)
Displacement	14.2 litres (866 in ³)
Compression ratio	15.5:1
Cold starter	Cold starter on injection pump
Air filter	Cyclone cleaner, main filter of paper type and catch-all safety filter
Radiator fan	Suction fan mounted on engine

ENGINE

Option 1

Cummins KT 1150 C450, 6-cylinder, 4-stroke direct-injected turbocharged engine.
Displacement 18.9 litres (1153 in³).

Gross rating	335 kW at 35 rps SAE J 270 (456 hp at 2100 rpm SAE)
Max. torque	1825 Nm at 25 rps SAE J 270 (1347 lbf ft at 1500 rpm SAE)

ENGINE

Option 2

Detroit Diesel 12 V71 TT, 12-cylinder, 2-stroke direct-injected turbocharged diesel engine.
Displacement 14.0 litres (854 in³).

Gross rating	335 kW at 35 rps SAE J270 (456 hp at 2100 rpm SAE)
Max. torque	1988 Nm at 23 rps SAE J270 (1467 lbf ft at 1400 rpm SAE)



ELECTRICAL SYSTEM

Voltage	24 V
Battery capacity	160 Ah
Alternator	850 W
Starter motor	4.8 kW (6.5 hp)



TRANSMISSION

Torque converter, type	Allison, TC690 with lock-up
Torque multiplication ratio	Max. 2.56:1
Gearbox	Allison CLBT 5961 Power-shift gearbox with built-in retarder

Gear	Top speed		Ratio
	km/h	mph	
1st	11	6.8	4.00:1
2nd	16	10.0	2.68:1
3rd	22	13.7	2.01:1
4th	32	20.0	1.35:1
5th	44	27.3	1.00:1
6th	65	40.4	0.67:1
Reverse	9	5.6	5.12:1



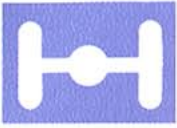
BRAKE SYSTEM

	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-actuated drum brakes on all wheels



WHEELS

Rims 13.00×33
Tyres 18.00×33/32 E3



Front axle

Rear axle

Reduction ratio, total in rear axle

AXLES

Fully floating drive axle with planetary hub reduction.

Welded box beam carried in hydropneumatic suspension units

Cast steel axle bridge carried in hydropneumatic suspension units

15.73:1



STEERING SYSTEM

Hydraulic power steering with mechanical return

Make

ZF

Lock-to-lock turns

3.5

Steering cylinder, type

1 double-acting

Hydraulic pump

Gear pump, driven directly from engine

Filter

1 paper filter with magnetic core

Manoeuvring data

Minimum turning radius

8000 mm (26 ft 3 in)

Minimum sweep radius

Left turn

9000 mm (29 ft 6 in)

Right turn

9200 mm (30 ft 2 in)



HYDRAULIC SYSTEM

Hydraulic pump, engine-dependent

Type

Gear pump, direct-driven from gearbox, automatically engaged during tipping

Number Capacity

1
4.0 l/s (0.9 UK gal/min, 1.1 US gal/min) at 35 rps = 240 l/min (53 UK gal/min, 63 US gal/min) at engine speed 2100 rpm.

Working pressure

20 MPa (2900 psi)

Drive system

Gear-driven PTO

Type
Number of pump take-offs

2 (1 is utilized)

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

12 s

Lowering time

12 s

Tipping angle

55°

Tipping stop

Rubber buffers



Compressor: Capacity

17.5 l/s (3.9 UK gal/s, 4.6 US gal/s) at 40 rps = 1050 l/min (231 UK gal/min, 277 US gal/min) at 2400 rpm
Driven directly from engine

Drive
Automatic frost protection pump

Pressure regulator: Relief pressure

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

Compressed air reservoir: Volume

60+60+20=140 litres (31 UK gal, 37 US gal)



FRAME

Kockums unique frame construction is based on welded box beams which run from front bumper to rear axle with no intermediate joints.



SUSPENSION

Front and rear axles

Hydropneumatic suspension units. Same suspension units for all four wheels.



SERVICE REFILL CAPACITIES

Engine oil, incl. filter, total
at change
Cooling system
Fuel tank
Gearbox, total
at change
Drive axle
Hydraulic system

	Litres	UK gal	US gal
Engine oil, incl. filter, total	25	5.5	6.6
at change	25	5.5	6.6
Cooling system	100	22	26
Fuel tank	600	132	159
Gearbox, total	80	18	21
at change	45	10	12
Drive axle	90	20	24
Hydraulic system	250	55	66



CAB

Steel cab, mounted on rubber pads. Heat and sound insulated. Heating and defroster system. Adjustable driver's seat with armrests and lap belt.

Number of exits	Door and emergency exit via window
Driver's seat	Seat adjustable to driver's weight with armrests and lap belt
Extra seat	Seat for passenger
Internal sound level	Approx. 80 dB (A)



RUBBER BODY

The 540 can be equipped with a rubber body. It permits a greater load volume. In addition, the noise level is kept much lower both in the cab and around the truck during loading and dumping. The 540 with rubber body has the following different dimensions.

		540	540 with rubber body
Payload capacity	sh.tons	40.0	40.0
Weight, unladen	kg (lb)	25800 (56879)	25800 (56879)
Load volume 2:1 SAE	m ³	23.5	26.0
	(cu.yd)	(30.7)	(34)
Loading height	m (ft, in)	3.16 (10.4)	3.40 (11.2)
Vehicle length	m (ft, in)	8.08 (26.6)	8.20 (26.11)
Vehicle width	m (ft, in)	3.73 (12.3)	3.90 (12.9)



WEIGHTS

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

	Front axle	Rear axle	Total
Unladen machine, kg (lb)	13400 (29542)	12400 (27337)	25800 (56879)
Payload, kg (lb)	6800 (14991)	29500 (62832)	36300 (80028)
			sh. tons 40.0
Total weight, kg (lb)	20200 (44533)	41900 (92374)	62100 (136907)

$$\text{Load factor} = \frac{\text{Payload}}{\text{Unladen weight}} = \frac{36300}{25800} = 1.41$$

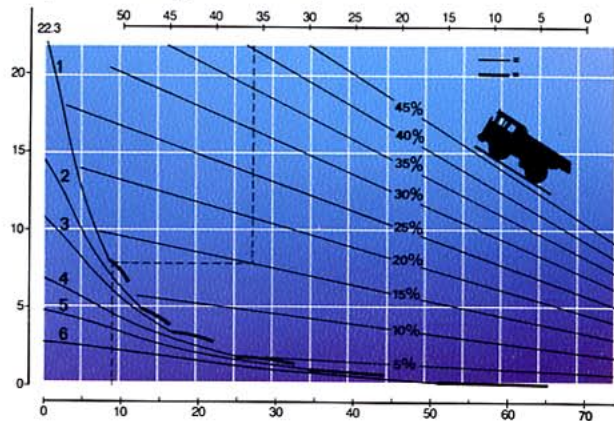


OVERHUNG TAILBOARD

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. It should be removed before the truck is used on rock hauling applications. The overhung tailboard increases the weight of the body by 250 kg (550 lb).

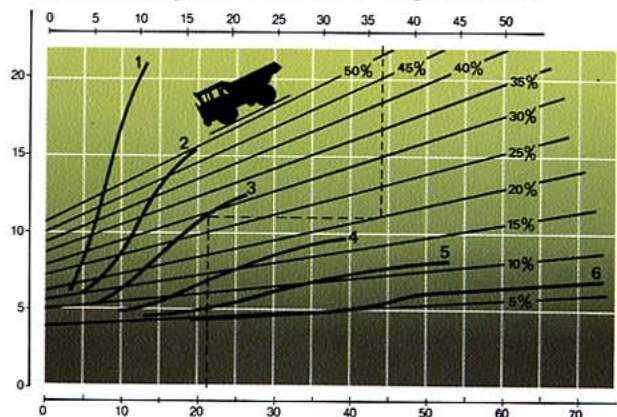
Tractive force graph

(Excl. rolling resistance)



Braking effort graph

(Excl. rolling resistance, incl. engine brake)



DUMPER BODY

Basic body

Body volumes (SAE 2:1*)

Volume struck, m ³ (cu.yd)	17 (22)
Volume heaped, m ³ (cu.yd)	23.5 (30.7)

Material

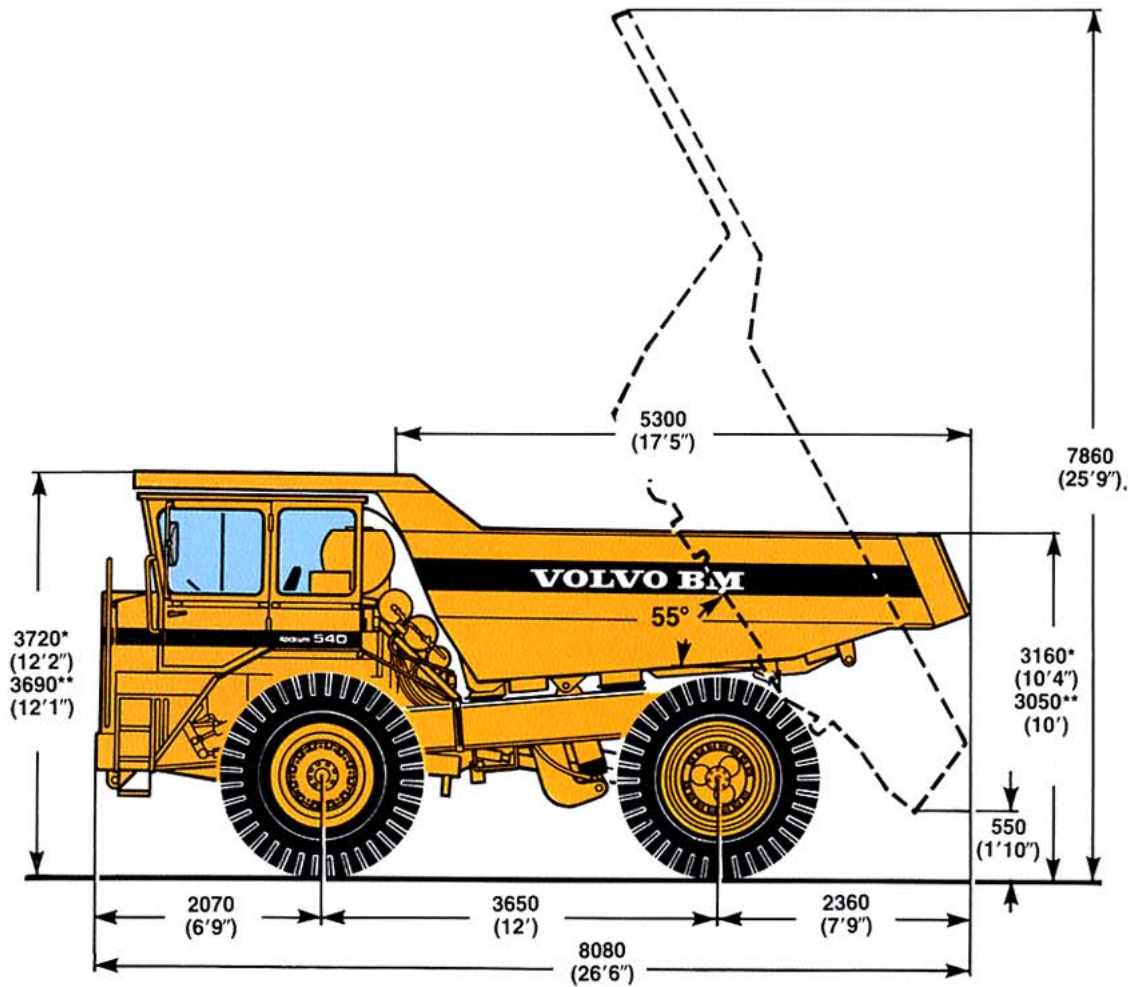
Hardened and tempered abrasion-resistant steel plate with tensile strength of 1 25 kg/mm²
Hardness min. 360–440 HB

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

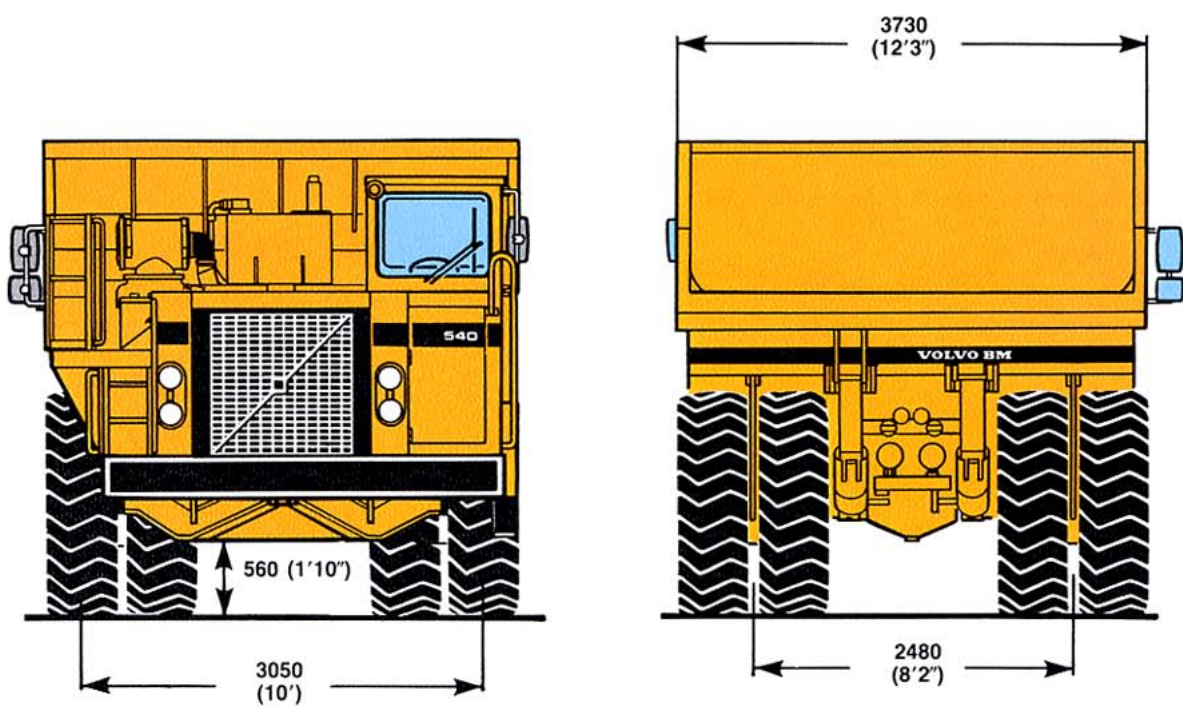
Weight 6300 kg (13890 lb)

*) 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.

DIMENSIONS IN mm (ft, in)



* Unladen
 ** Laden



STANDARD EQUIPMENT



SAFETY & COMFORT

- Cab with filtered fresh air intake and defroster
- Ergonomically designed and adjustable driver's seat
- Windshield wipers
- Windshield washers
- Rear-view mirror
- Sun visor
- Lap belt
- Cigarette lighter and ashtray
- Tinted glass
- Horn
- Lights: headlights, bright/dim/asymmetric curve and fog lights parking lights
- reversing lights
- direction indicators
- reverse beams
- brake lights
- tail lights
- cab lighting
- instrument lighting
- Indicator for air cleaner
- Complete tyre inflation kit
- Tool box
- Tool kit
- Speedometer
- Tachometer
- Anti-theft lock
- Passenger seat
- Hazard flashers
- Rock ejectors



ENGINE & ELECTRICAL SYSTEM

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



BODY EQUIPMENT

- Body heating (exhaust gas)
- Rock body



TRANSMISSION

- Torque converter
- Power-shift gearbox
- Automatic lock-up

EXTRA EQUIPMENT

(Standard equipment on certain markets)

- Heated rear-view mirrors
- Heated driver's seat
- Air conditioning
- Tachograph
- Fenders
- Radio
- Elevated body
- Overhung tailboard, self-opening
- Body with rubber floor
- Rubber-lined body
- Emergency steering
- Spare wheel
- Silencer
- Electric engine preheater
- Reversing alarm

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.

Ref.No 21 2 669 1658
ENGELSKA

Production group for basic printed matter Volvo BM
Photo: Roy Lemnäs