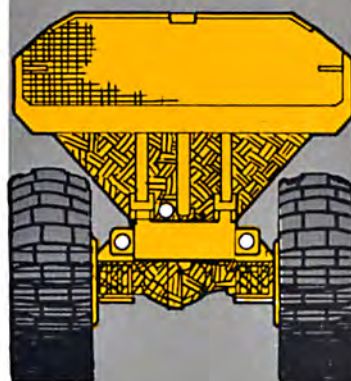
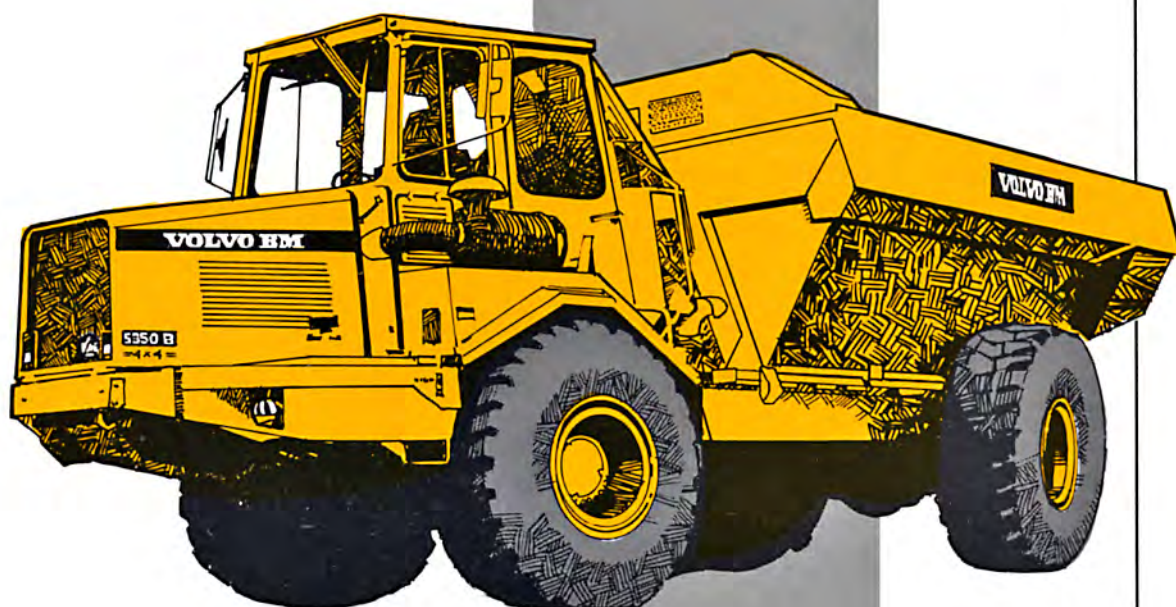


# VOLVO BM 5350 B 4x4



Articulated Hauler  
Specifications



# VOLVO BM 5350 B 4x4



## ENGINE

<b>Make</b>	Volvo
Model	TD 71 GA
Type	4 Cycle
Aspiration	Turbocharged
Rated Output (SAE J1349)	157 kW @ 2400 rpm (213 bhp)
Flywheel Output* (SAE J1349)	155 kW @ 2400 rpm (210 bhp)
Number Cylinders	6
Bore & Stroke	105mm x 130mm (4 1/8" x 5 1/8")
Compression Ratio	15.5:1
Displacement	6.7 litres (411 in <sup>3</sup> )
Maximum Torque	710 N•m @ 1800 rpm (524 lb-ft)

\*With radiator fan working at 2400 rpm, output is 140 kW (190 bhp).



## TRANSMISSION

ZF 5 HP 500. Planetary Type, automatic shift, integral torque converter with automatic lock-up. Direct mounted, 5 forward speeds, 1 reverse. Dropbox contains high/low gear unit providing a total of 10 forward, 2 reverse speeds.

### Maximum Speeds @ 2400 RPM Governed Engine Speed

Range	Gear Ratio	Low Range		High Range	
		km/h	(mph)	km/h	(mph)
1	5.60	6.0	( 3.7)	9.0	( 5.6)
2	3.43	9.0	( 5.6)	15.0	( 9.3)
3	2.01	15.0	( 9.3)	25.0	(15.5)
4	1.42	22.0	(13.7)	36.0	(22.4)
5	1.00	31.0	(19.3)	51.0	(31.7)
R	4.84	7.0	( 4.4)	11.0	( 6.8)

### Dropbox

Volvo BM Model FL 652 contains high/low gear unit to distribute power between front axle and rear axle.



## DRIVE AXLES

Full floating axle shafts and planetary gear type hub reduction. Continuous drive on both axles with longitudinal differential lock engaged.

### Front

Make	Volvo BM
Model	AH 54 E
Differential Lock	100%
Lock-up	Yes

### Rear

Make	Volvo BM
Model	AH 71 B
Differential Lock	100%
Lock-up	Yes



## AIR

### Compressor

Volvo TD 71 @ 2060 rpm	7.1 l/s (15.0 cfm)
------------------------	--------------------

### Service Air

Pressure	765 kPa (111 psi)
Reservoir Capacity	66 litres (17 ft <sup>3</sup> )



## TIRES

### Standard – Front

Michelin 23.5R25• Radials	Rim Width 495mm (19.5")
---------------------------	----------------------------

### Standard – Rear

Michelin 29.5R25•• Radials	635mm (25.0")
----------------------------	---------------



## GROUND PRESSURE

At 15% slump of unladen diameter and standard weights and tires. Cone penetrometer value at a depth of 250 mm (9.8 in).

### Empty Vehicle

	kg/cm <sup>2</sup>	(lb/in <sup>2</sup> )
Front Axle	0.97	(13.78)
Rear Axle	0.48	(6.96)

### Loaded Vehicle

Front Axle	1.34	(19.00)
Rear Axle	1.95	(27.70)
Cone Penetrometer Value	73	



## LOAD CAPACITY

22.5 metric tonne (25 short ton)

	m <sup>3</sup>	(yd <sup>3</sup> )
Struck (SAE)	10.1	(13.2)
Heap 2:1 (SAE)	13.0	(17.0)



## WEIGHTS

	kg	(lb)
Chassis with Hoist	12 150	(26,786)
Body	3 150	( 6,944)
Net Weight	15 300	(33,730)
Front Axle	8 850	(19,510)
Rear Axle	6 450	(14,220)
Payload	22 500	(49,603)
Gross Weight	37 800	(83,333)
Front Axle	12 250	(27,005)
Rear Axle	25 550	(56,328)



## STEERING

Closed center, hydromechanical articulated steering using two, double-acting cylinders and piston pump. The steering gear is of rack and pinion type. Emergency steering provided by ground-driven piston pump in accordance with SAE J53 is standard.

Steering Angle	45°
Lock-to-Lock Turns	3.4
Turning Diameter (SAE)	15.0m (49'-3")
Steering Pump Output (@ 2,400 rpm)	100 l/m (26 g/m)
System Relief Pressure	18 996 kPa (2,755 psi)



## HOIST

One Volvo BM 4-stage single-acting hoist cylinder, inverted and inboard mounted, piston pump. The two upper stages are double-acting. Body hoist kick-out standard.

Body Raise Time	12 sec.
Body Lower Time	22 sec.
Hoist Pump Output (@ 2,400 rpm)	100 l/m (26 g/m)
System Relief Pressure	18 966 kPa (2,755 psi)



## ELECTRICAL

Number Batteries	2
Voltage	24 volts
Battery Capacity	135 Ah
Generator Rating	1260 watts/55 amps
Starter Motor Power	5 kW (6.8 bhp)

# VOLVO BM 5350 B 4x4



## BRAKES

### Service

Air/oil actuated disc brakes with two calipers per disc on both axles. Dual circuit system; one circuit front axle, one circuit rear axle. System conforms to SAE J1224.

### Front Axle

Disc Diameter Each ..... 47cm (18.5 in)  
Lining Area Per Axle ..... 1 584cm<sup>2</sup> (245.5 in<sup>2</sup>)

### Rear Axle

Disc Diameter Each ..... 47cm (18.5 in)  
Lining Area Per Axle ..... 1 584cm<sup>2</sup> (245.5 in<sup>2</sup>)

### Secondary

Two independent circuits within the service brake system provide secondary stopping capability conforming to SAE J1224. System is manually or automatically applied to stop vehicle within prescribed braking distance.

### Parking

Spring-actuated disc brake on driveline out of dropbox. Automatically applied if air pressure is lost. Manually controlled from instrument panel.

Disc Diameter ..... 37cm (14.6 in)  
Lining Area ..... 282cm<sup>2</sup> (43.2 in<sup>2</sup>)

### Retarder

Foot activated button controls air-operated diaphragm on exhaust side of turbo for improved braking. Exhaust brake can also be used at idling speed for faster machine warm-up.



## BODY

Flat floor, sloped tailchute. High yield strength 1100 N/mm<sup>2</sup> (160,000 psi) alloy steel used for all plates in thickness of:

Floor ..... 14mm (0.55")  
Front ..... 10mm (0.39")  
Sides ..... 12mm (0.47")  
Tailchute ..... 16mm (0.63")

Plate hardness of 360-440 BHN is standard to extend the life of the body and reduce maintenance costs. A grill window in the front part of the body helps the driver spot easily next to the loading tool.



## CAB

Volvo BM safety cab, ROPS/FOPS tested and approved in accordance with SAE J1040c and J231 respectively. Mounted in the middle on rubber pads enabling the driver to remain comfortable and safe from vibrations in rough terrain. Filtered air and pressurized, safety and tinted glass throughout. The cab is spacious with low noise levels (77 dBA) and has well arranged controls and instrumentation for safe, effortless driving. Passenger seat and belt standard.



# VOLVO BM 5350 B 4x4

## STANDARD EQUIPMENT

### General

Air horns	Steering joint locking assembly
Body hoist kickout	Supplementary steering system
Body prop strut	Tool box
Electric start	Tow hooks, front
Fan guard	Work platform fender step
Mirrors, right and left	
Mud flaps	
Radiator grille guard	
Reverse alarm	

### Cab

Ash tray	Roof hatch
Cab interior light	ROPS/FOPS
Cigar lighter	Rubber floor mat
Downshift inhibitor	Sun visor
Heater and defroster	Tinted glass
Operator seat, adjustable	Windshield washer
Operator seat belt	Windshield wiper
Passenger seat and belt	

### Gauges and Lights

<b>Gauges:</b>	<b>Indicator Lights:</b>
Fuel level	Charging
Service air pressure	Turn signals
Speedometer	Engine preheating
Tachometer	Emergency steer pump
	Headlights
	Longitudinal diff-locks
	Steering function

### Warning Lights

Air filter restriction	Low coolant level
High engine rpm's	Low engine oil pressure
High gearbox temperature	Low hydraulic oil level
Hydraulic pump malfunction	Park brake applied
Low brake fluid level	Steer system malfunction
Low brake pressure	

### Exterior Vehicle Lights

Back-up light	Headlights, two
Dual combination stop and taillights	Turn signals
	Work lights

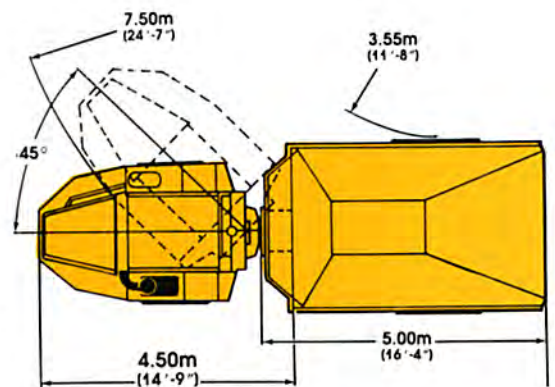
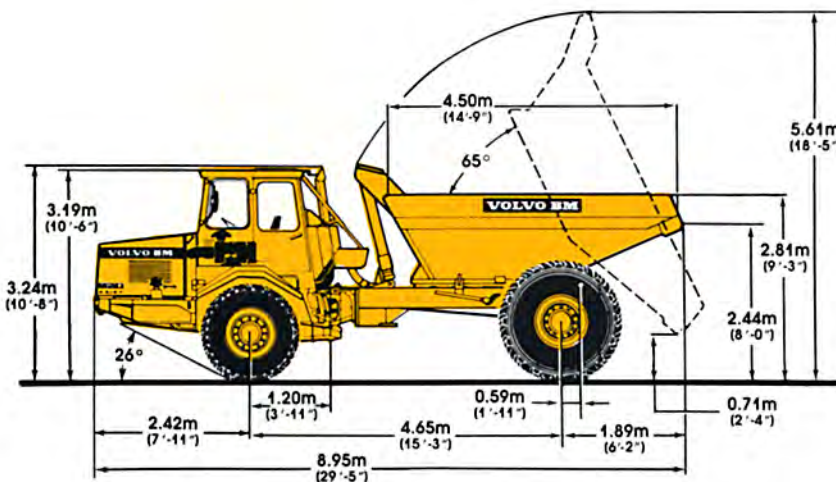
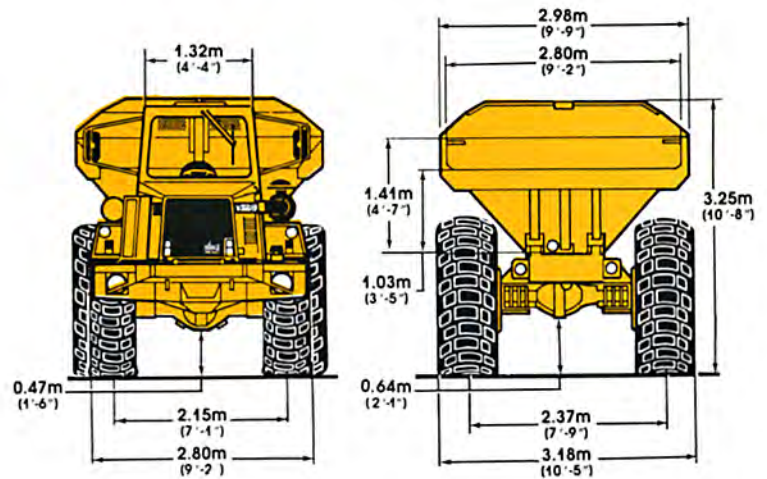
## OPTIONAL EQUIPMENT

Air conditioning	Radio
Exhaust heated body	Rotating beacon light



## SERVICE CAPACITIES

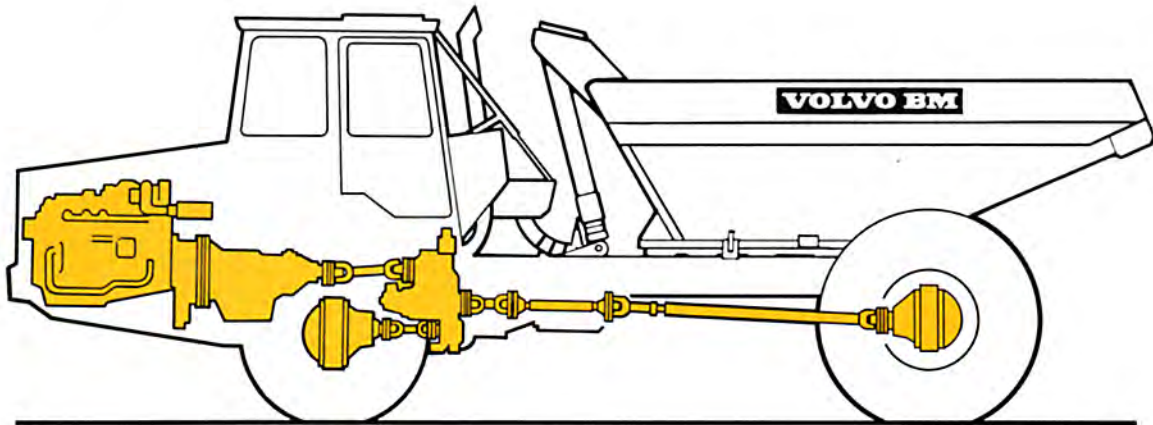
	litres	(gallons)
Crankcase (incl. filters)	18.5	( 4.9)
Transmission	23.0	( 6.1)
Dropbox	6.0	( 1.6)
Cooling System	30.0	( 8.0)
Fuel Tank	280.0	(74.0)
Hydraulic System	160.0	(42.0)
Hydraulic Tank	135.0	(35.7)
Front Axle	35.0	( 9.2)
Rear Axle	47.0	(12.4)
Brake Fluid Reservoir	1.5	( 0.4)



**Note:** Illustration may include optional equipment. **Note:** Dimensions shown are for empty vehicle with standard tires.

Standard and optional equipment may vary from country to country. Product improvement is a continuing Clark Michigan Company project. Therefore, all specifications are subject to change without notice.

# VOLVO BM 5350 B 4x4



## POWERTRAIN

### ENGINE

The Volvo BM 5350B is powered by the Volvo TD 71 GA turbodiesel. This engine is a six cylinder, direct-injected, turbo-charged, four-stroke with overhead valves and in-line cylinders. The replaceable cylinder liners are the wet type, in direct contact with the coolant, improving heat removal. The split cylinder heads with separate gaskets allow for easy servicing and provide large heat dissipation. The TD 71 GA is a modern, lightweight engine combining high power with low fuel consumption.

### TRANSMISSION

The transmission in the 5350B is the automatic ZF 5 HP 500 Ecomat utilizing a hydrodynamic torque converter with lock-up clutch for direct drive and a rear-mounted planetary gearbox. The lock-up clutch provides a direct mechanical link between the engine and planetary gearbox after the vehicle start-up phase, eliminating the power losses encountered in converter drive and providing improved fuel consumption. The closely spaced ratios in the five (5) forward, one (1) reverse speed transmission also contribute to low fuel consumption. The transmission output propeller drives a Volvo BM dropbox with built-in differential, lock-up and high/low gear unit. This arrangement provides a total of ten (10) forward and two (2) reverse gear selections.

Gear shifts are performed automatically on receipt of signals from an electronic control unit. This unit responds to engine output by position of the accelerator, position of the speed range selector, and vehicle speed. Signals are then transmitted to the electro-hydraulic valves which actuate the corresponding clutches.

The modular design of the ZF 5 HP 500 transmission guarantees simple, cost-saving servicing routines. The Volvo TD 71 GA engine and the ZF 5 HP 500 transmission combine for a very economical, proven powertrain package.

### DRIVE AXLES – 4x4

The 5350B 4x4 has constant four-wheel drive. This gives high off-road mobility and a smooth ride on all surfaces. The axle shafts are fully floating and drive planetary hub reductions in each wheel. Each axle contains an air-operated dog clutch type differential lock with 100% lock-up.

The longitudinal differential lock is located in the dropbox and allows an equal amount of tractive effort to be transferred to the front axle and rear axle. This longitudinal lock is used mainly in very slippery and muddy conditions.

The transverse differential locks are located on each axle. When applied in extremely difficult terrain, they transmit 100% of the tractive force to the wheel that is in contact with the ground.



## FRAME

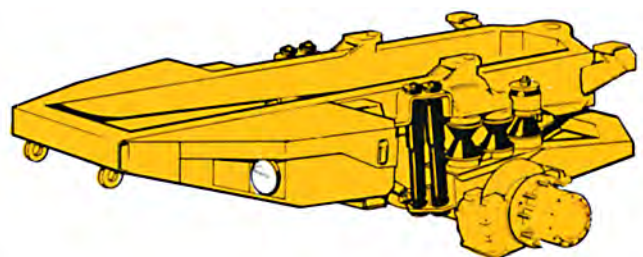
Front power frame constructed of two tapered box sections connected at the rear by the steering joint and at the front by an integral bumper. The rear load carrying frame is made up of two longitudinal box section rails bridged by three welded cross members. The frame joint, designed to withstand severe stresses, consists of a steering joint and rotational joint. Because the load carrying frame unit can rotate in relation to the power unit, the frames are not subjected to torsional stresses.



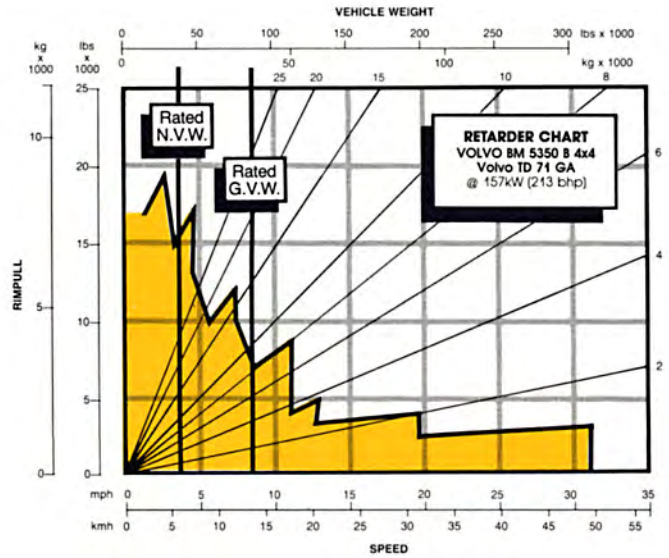
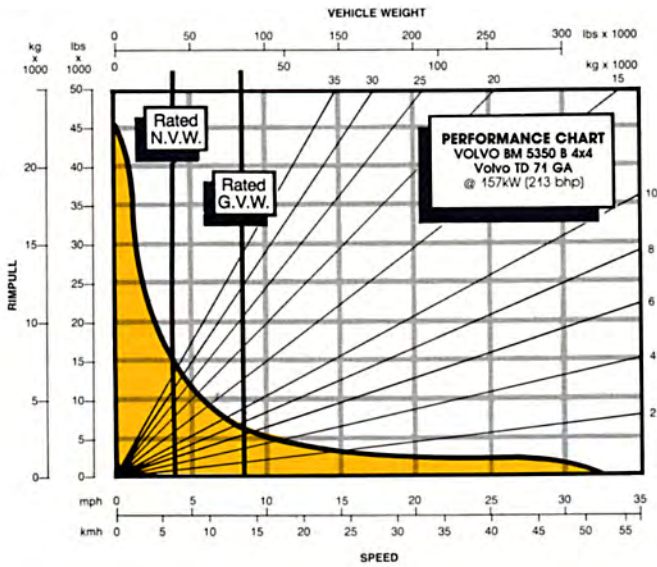
## SUSPENSION

### FRONT

Suspended in an A-frame and fixed laterally by tie rods. Each side consists of two rubber springs, two shock absorbers and one anti-sway rubber pad.



# VOLVO BM 5350 B 4x4



## INSTRUCTIONS:

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

1. Find the total resistance on diagonal lines on right-hand border of performance or retarder chart.
2. Follow the diagonal line downward and intersect the NVW or GVW weight line.
3. From intersection, read horizontally right or left to intersect the performance or retarder curve.
4. Read down for vehicle speed.



## Clark Michigan Company

A subsidiary of VME Group N. V.  
 22221 ST. CLAIR AVENUE • CLEVELAND, OHIO 44117  
 216/383-5000 • CABLE ADDRESS EUCINC

FORM No. 19-010  
 Printed in U.S.A. (1/86)