VOLVO BM

# A 25
## 4×4


- ***Engine output:***
  ***SAE J1349 Net 177 kW (240 hp)***
- ***Operating weight:***
  ***15,3 t (32 510 lb)***
- ***Load capacity:***
  ***22,5 t (25 sh tons)***

- *Direct-injected, turbocharged Volvo diesel with intercooler*
- *Electronically controlled automatic shift. High and low gear ranges*
- *One longitudinal and two transverse diff locks. All with 100% lock-up.*
- *Front axle with 3-point suspension and effective shock absorption*
- *Optional turnaround system for effective haulage in confined spaces*

## ENGINE

Volvo TD 71 K Intercooler: 6-cylinder-in-line direct-injected turbocharged aftercooled 4-cycle diesel with overhead valves and wet replaceable cylinder linings.

**Fan:** Hydrostatic driven thermostatically controlled radiator fan drawing power only when needed.

| | | | | |
|---|---|---|---|---|
| Max. power at | r/s | (r/min) | 40 | (2400) |
| SAE J 1349 Gross | kW | (hp) | 180 | (244) |
| Flywheel power at | r/s | (r/min) | 40 | (2400) |
| SAE J 1349 Net | kW | (hp) | 177 | (240) |
| DIN 6271* | kW | (hp) | 177 | (240) |
| Max. torque at | r/s | (r/min) | 27 | (1600) |
| SAE J 1349 Gross | Nm | (lbf ft) | 815 | (601) |
| SAE J 1349 Net | Nm | (lbf ft) | 800 | (590) |
| DIN 6271** | Nm | (lbf ft) | 6,73 | (411) |
| Displacement, total | l | ($in^3$) | 800 | (590) |
| Bore | mm | (in) | 104,77 | (4,125) |
| Stroke | mm | (in) | 130 | (5,12) |
| Compression ratio | | | 15,5:1 | |

* with fan at normal 20 r/s (1200 r/min). With fan operating at 40 r/s (2400 r/min) the flywheel power is 160 kW (218 hp) which corresponds to DIN 70020.

** with fan at normal 20 r/s (1200 r/min). With fan operating at 40 r/s (2400 r/min) the maximum torque is 710 Nm which corresponds to DIN 70020

## ELECTRICAL SYSTEM

| | | | |
|---|---|---|---|
| Voltage | V | | 24 |
| Battery capacity | Ah / V | | 135 / 2x12 |
| Generator rating | W / A | | 1260 / 45 |
| Starter motor power | kW | (hp) | 5 (6,8) |

## SERVICE REFILL CAPACITIES

| | | | | |
|---|---|---|---|---|
| Crankcase | l | (US gal) | 24 | (6,3) |
| Fuel tank | l | (US gal) | 280 | (74) |
| Cooling system | l | (US gal) | 30 | (7,9) |
| Transmission total | l | (US gal) | 16 | (4,2) |
| Dropbox | l | (US gal) | 6 | (1,6) |
| Front axle | l | (US gal) | 35 | (9,2) |
| Rear axle | l | (US gal) | 51 | (13,5) |
| Hydraulic system | l | (US gal) | 160 | (4,2) |
| Hydraulic tank | l | (US gal) | 145 | (38,3) |

## DRIVETRAIN

**Torque converter:** single stage with free-wheeling stator and automatic lock-up.

**Transmission:** Planetary transmission, electronically controlled fully automatic gear-shifting.

**Dropbox:** Volvo BM dropbox with 2-stage design, power take-off and differential.

**Differential locks:** One longitudinal and two transversal differential locks. All with 100% lock-up.

**Axles:** All axles are of Volvo BM design. The driving axles have fully floating axle shafts with planetary gear type hub reduction.

| | | | | |
|---|---|---|---|---|
| Torque converter | | | 2,4 :1 | |
| Transmission | | | ZF 5 HP 500 | |
| Dropbox | | | FL 652 | |
| Speeds | | | | |
| Low gear, forward | 1 | km/h(mile/h) | 6,0 | (3,7) |
| | 2 | km/h(mile/h) | 9 | (5,6) |
| | 3 | km/h(mile/h) | 15 | (9,3) |
| | 4 | km/h(mile/h) | 22 | (13,7) |
| | 5 | km/h(mile/h) | 31 | (19,3) |
| Low gear, reverse | 1 | km/h(mile/h) | 7 | (4,3) |
| High gear, forward | 1 | km/h(mile/h) | 9 | (5,6) |
| | 2 | km/h(mile/h) | 15 | (9,3) |
| | 3 | km/h(mile/h) | 25 | (15,5) |
| | 4 | km/h(mile/h) | 36 | (22,4) |
| | 5 | km/h(mile/h) | 51 | (31,2) |
| High gear, reverse | 1 | km/h(mile/h) | 11 | (6,8) |

| | |
|---|---|
| Front axle | AH 54 |
| Rear axle | AH 71 |
| **Tires** | 23.5 R 25<br>29.5 R 25 |

## BRAKE SYSTEM

Dual-circuit system with air-hydraulic disc-brakes, designed to comply with IS0 3450 and SAE J1473 at total machine weight.

**Circuit division:** one circuit for front axle and one for bogie.

**Parking brake:** The parking brake is a spring actuated brake on the propeller shaft, designed to hold a loaded machine on a grade up to 18%.

**Compressor:** The pneumatic system is driven by a gear driven compressor

**Exhaust brake retarder:** standard.

**Retarder:** as optional equipment.

## STEERING SYSTEM

Hydromechanical articulated steering. 3,4 lock-to-lock turns.

**Supplementary steering:** Supplementary steering function as standard.
Complies with ISO 5010 at total machine weight .

**Cylinders:** Two double-acting cylinders.

**Steering angle:** ± 45°

## HYDRAULIC SYSTEM

**Pump:** Engine-dependent variable piston pumps mounted on flywheel power take-offs. Three of four take-offs are used.

One ground-dependent piston pump for supplementary steering mounted on the dropbox.

**Filtration:** Filtration of oil through 2 paper and magnet filters.

| | | | |
|---|---|---|---|
| Pump capacity | l/min | | 100* / 118** |
| | (US gal/min) | | (26,4* / 31,2**) |
| at | r/s | (r/min) | 40 (2400) |
| Working pressure | MPa | (psi) | 18,5* (2680*) |
| | MPa | (psi) | 18,5** (2680**) |

* = pump 1, 2, 3
** = ground-dependent hydraulic pump

## SUSPENSION

**VOLVO BM SUSPENSION SYSTEM**
**Front axle:** Two rubber springs with bottoming absorption on either side. Stabilizer.Two shock-absorbers on either side.

## CAB

Volvo BM cab, tested and approved in accordande with ROPS standard ISO 3471/SAE J1040C.

The cab is mounted on rubber pads, which reduces vibrations at operator's station.

**Heater and defroster:** Filtered air and pressurized cab.

**Operator's seat:** Operator's seat with flameproof upholstery. Extra seat for trainer.

| | | |
|---|---|---|
| Number of exits (includes door) | | 3 |
| Internal noise level | dB (A) | 77 |

## BODY

**Cylinder:** One 3-stage hoist cylinder with the top stage double-acting. Hydraulic tipping stop built into the tipping cylinder.

**Body:** Body made of hardened-and-tempered steel with particularly high impact strength and with wear plates as standard.

| | | | | |
|---|---|---|---|---|
| Tipping angle | ° | | 65 | |
| Tipping time with load | s | | 12 | |
| Lowering time | s | | 13 | |
| Body plate thickness | | | | |
| front | mm | (in) | 10 | (0,39) |
| sides | mm | (in) | 12 | (0,47) |
| bottom | mm | (in) | 12 | (0,47) |
| chute | mm | (in) | 16 | (0,62) |
| Wear plates | mm | (in) | 8 | (0,31) |
| Yield strength | kp/mm$^2$ | (psi) | 90 | (128000) |
| Tensile strength | kp/mm$^2$ | (psi) | 125 | (178000) |
| Hardness min. | HB | | 360-440 | |

## WEIGHTS

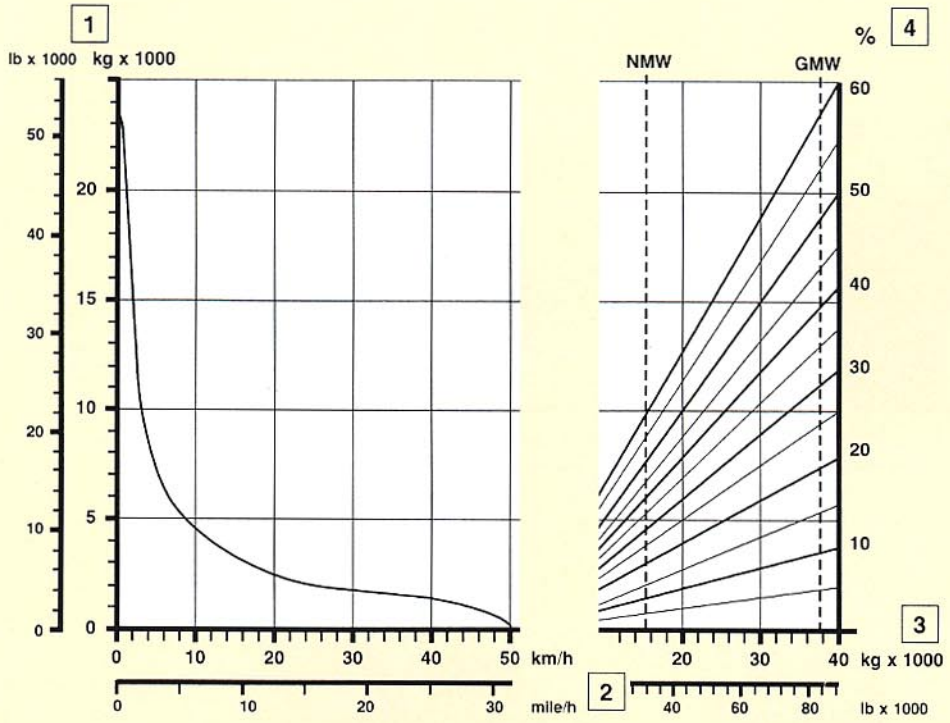
Service weight includes body with wear plates, oil, fuel and water.

| | | | | |
|---|---|---|---|---|
| Service weight | | | | |
| Front | kg | (lb) | 8850 | (19510) |
| Rear | kg | (lb) | 6450 | (14220) |
| Total | kg | (lb) | 15300 | (32510) |
| Payload | kg | (lb) | 22500 | (49610) |
| Total weight | | | | |
| Front | kg | (lb) | 12250 | (27010) |
| Rear | kg | (lb) | 25550 | (56340) |
| Total | kg | (lb) | 37800 | (82120) |

## GROUND PRESSURE

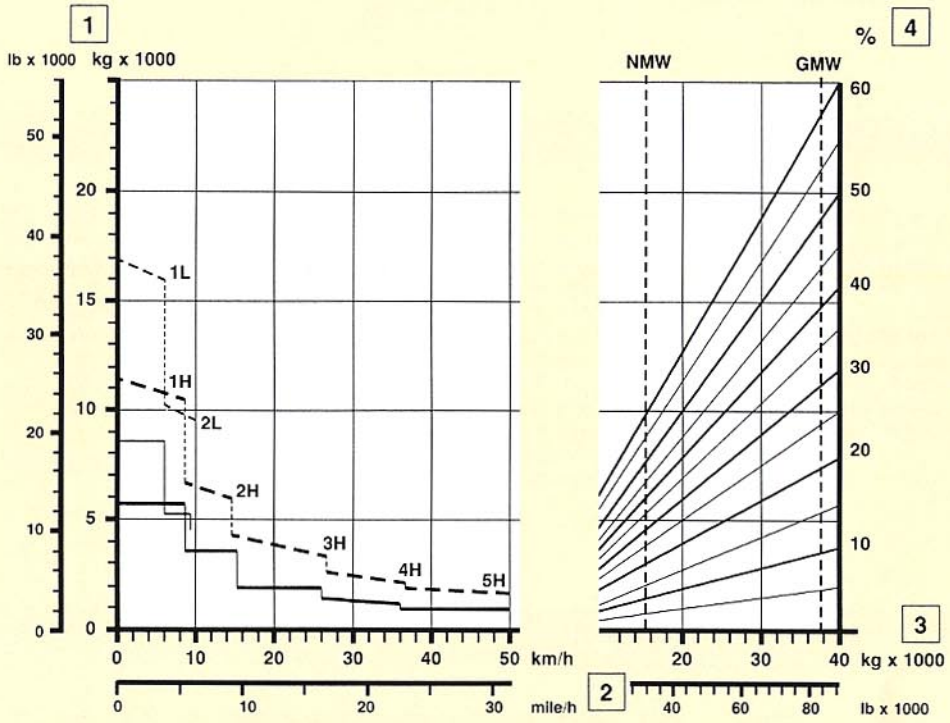
At 15% slump of unloaded diameter and specified weigths.
Cone pentrometer value at depth of 250 mm (9,8 in).

| | | | | |
|---|---|---|---|---|
| Unloaded | | | | |
| Front | kPa | (psi) | 92 | (13,4) |
| Rear | kPa | (psi) | 46 | ( 6,7) |
| Loaded | | | | |
| Front | kPa | (psi) | 128 | (18,6) |
| Rear | kPa | (psi) | 182 | (26,4) |
| Cone penetrometer value | | | 79 | |




**RIMPULL**

*1 Rimpull in kg (lb)*
*2 Speed in km/h (mile/h)*
*3 Hauler weight in kg (lb)*
*4 Rolling resistance + grade resistance in %*




**RETARDATION**

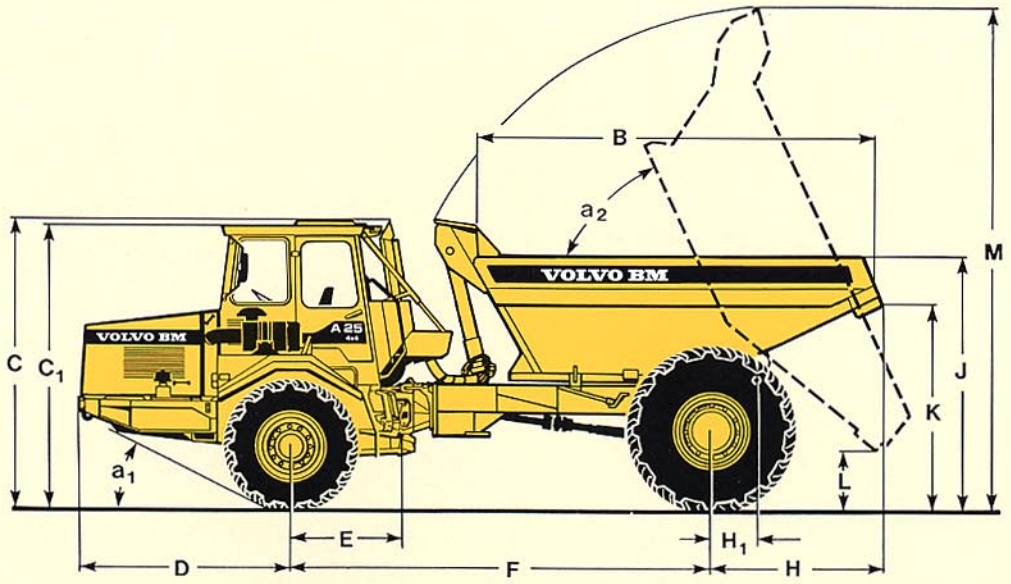
*1 Rimpull in kg (lb)*
*2 Speed in km/h (mile/h)*
*3 Hauler weight in kg (lb)*
*4 Rolling resistance - grade resistance in %*

*Dotted line = maximal retardation (with optional retarder)*

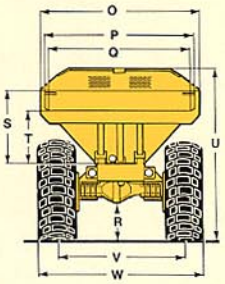
## INSTRUCTIONS

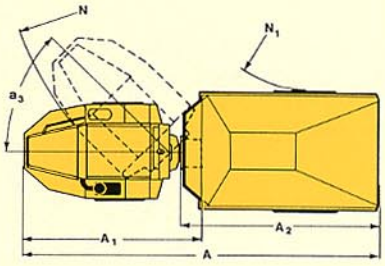
Diagonal lines represent total resistance (Grade % plus rolling resistance %). Charts based on 0% rolling resistance, standard tires and gearing unless otherwise stated.

**A.** Find the total resistance on diagonal lines on righthand border of performance or retarder chart.
**B.** Follow the diagonal line downward and intersect the NVW or GVW weight line.
**C.** From intersection, read horizontally left to intersect the performance or retarder curve.
**D.** Read down for machine speed.








## OPERATING DATA VOLVO BM A25 4x4

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | mm (ft in) | 8955 | (29'5") | H | mm (ft in) | 1890 | (6'2") | O | mm (ft in) | 2980 | (9'9") | X | mm (ft in) | 450 | (1'6") |
| $A_1$ | mm (ft in) | 4495 | (14'9") | $H_1$ | mm (ft in) | 590 | (2'1") | P | mm (ft in) | 2800 | (9'2") | X* | mm (ft in) | 465 | (1'6") |
| $A_2$ | mm (ft in) | 4985 | (16'4") | J | mm (ft in) | 2730 | (8'11") | Q | mm (ft in) | 2680 | (8'10") | $X_1$ | mm (ft in) | 585 | (1'11") |
| B | mm (ft in) | 4500 | (14'9") | J* | mm (ft in) | 2810 | (9'3") | R | mm (ft in) | 555 | (1'10") | $X_2$ | mm (ft in) | 770 | (2'7") |
| C | mm (ft in) | 3200 | (10'6") | K | mm (ft in) | 2335 | (7'11") | R* | mm (ft in) | 635 | (2'1") | Y | mm (ft in) | 2150 | (7'1") |
| C* | mm (ft in) | 3240 | (10'8") | K* | mm (ft in) | 2435 | (8') | $R_1$ | mm (ft in) | 695 | (2'3") | Z | mm (ft in) | 2795 | (9'2") |
| $C_1$ | mm (ft in) | 3150 | (10'4") | L* | mm (ft in) | 705 | (2'4") | S | mm (ft in) | 1405 | (4'7") | $a_1$ | ° | 26 | |
| $C_1$* | mm (ft in) | 3190 | (10'6") | M* | mm (ft in) | 5610 | (18'5") | T | mm (ft in) | 1030 | (3'5") | $a_2$ | ° | 65 | |
| $C_2$ | mm (ft in) | 1320 | (4'4") | N | mm (ft in) | 7500 | (24'7") | U | mm (ft in) | 3165 | (10'5") | $a_3$ | ° | 45 | |
| D | mm (ft in) | 2415 | (7'11") | $N_1$ | mm (ft in) | 3550 | (11'8") | U* | mm (ft in) | 3245 | (10'8") | | | | |
| E | mm (ft in) | 1200 | (3'11") | | | | | V | mm (ft in) | 2370 | (7'9") | | | | |
| F | mm (ft in) | 4650 | (15'3") | | | | | W | mm (ft in) | 3180 | (10'5") | | | | |

* = unloaded machine

## LOAD CAPACITY

| | | | | |
|---|---|---|---|---|
| Load capacity | kg | (sh tons) | 22500 | (25) |
| Body, struck | $m^3$ | ($yd^3$) | 10,1 | (14,4) |
| heaped | $m^3$ | ($yd^3$) | 13,0 | (17,0) |

**Body volumes according to SAE 2:1.** In the case of bodies with struck volumes of less than 10 $m^3$ (13 $yd^3$), heaped volume is given to the nearest half $m^3$.
In the case of bodies with struck volumes of 10 $m^3$ (13 $yd^3$) or more, heaped volume is given to the nearest whole $m^3$.
Struck volume is given in $m^3$ ($yd^3$) to one decimal place.

# 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
Attachment points for seat belt
Cigarette lighter
Ashtray
Horn
Complete tyre inflation unit
Protective grille for rear window
Hazard flashers
Cab roof hatch
Tinted glas
Lights:
- headlights
- main/dipped/asym.
- parking lights
- reverse lights
- direction indicators
- side marker lights
- brake lights
- cab lighting
- instrument lighting

Tool box
Steering joint locking assembly

## Engine & electrical system
Turbocharger
Intercooler
Alternator
Preheating
Ground-dependent secondary steering pump
Battery disconnect switch
Electrical outlet
Indicator for aircleaner
Gauges for:
- brake pressure
- fuel
- engine temperature
- revolutions and hours

Pilot lamps for:
- battery charging
- main beam
- direction indicators

Warning lamps for:
- low hydraulic oil level
- steering function
- engine-dependent pump
- brake fluid level
- low brake pressure
- parking brake
- engine oil pressure
- transmission temperature
- air filter
- engine overspeed

Central warning:
- hydraulic oil level
- steering function
- brake fluid level
- brake pressure
- radiator coolant level
- engine oil pressure
- engine overspeed
- airfilter
- battery charging
- transmission temperature

## Drivetrain
Torque converter
Automatic gear-shifting
Dropbox with high/low gear
Automatic lock-up
Longitudinal differential lock
Differential lock, front axle
Differential lock, rear axle

## Body
Body with wear plates and exhaust gas ducts

## Tires
Front: 23.5 R 25**
Rear: 29.5 R 25*

# OPTIONAL EQUIPMENT

**Service and maintenance**
Tool kit

**Engine**
Extra fuel filter
Oil-bath air cleaner

**Electrical equipment**
Rotating beacon with collapsible mount
Side direction indicators
Side marker lights
Headlights for left-hand traffic
Working lights
Electrically heated rear-view mirrors
Automatic cut-outs

**Drivetrain**
Retarder (by delivery)

**Cab equipment**
Seat belt
Passenger seat
Heated operator's seat
Speedometer
Air conditioning

**External equipment**
Fender step with work platform
Wheel chocks
Mudguard wideners, front, 2,7 m

**Protection equipment**
Collision guard
Overhead guard, FOPS

**Other equipment**
Turnaround system
Exhaust gas cleaning
TBG-equipment
SMV-symbol
Air horns
Rear-view mirrors (EEC)



**Volvo BM Company**
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EUCLID

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