

AD45B

Underground Articulated Truck



Engine

Engine Model	Cat® C18 ACERT™	
Gross Power – SAE J1995	439 kW	589 hp
Net Power – SAE J1349	414 kW	555 hp

Operating Specifications

Nominal Payload Capacity	45 000 kg	99,208 lb
Gross Machine Operating Weight	85 000 kg	187,393 lb

AD45B Features

One Supplier

Caterpillar designed and manufactured major power and drive train components for reliability and performance.

High Performance Engine

The Cat® C18 engine with ACERT™ Technology offer the perfect balance between power, robust design and economy.

Power Shift Transmission

Reliable and rugged design to deliver power and efficiency for peak power train performance.

Engine/Power Train Integration

Intelligent and robust electronics integrate all power and drive train components for overall optimum performance.

Robust Braking

Cat oil-cooled multiple disc brakes offer exceptional, fade resistant braking in all haul road conditions.

Comfortable Cab

Ergonomically designed for all-day comfort, control and productivity.

Truck Body

A variety of Caterpillar designed and built bodies and liners ensure optimal performance and reliability in tough mining applications.

Enhanced Serviceability

Designed with improved service points and grouped service locations to simplify maintenance and repair.

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The AD45B underground articulated truck is designed for high production, low cost-per-ton hauling in underground mining applications. Rugged construction and simplified maintenance guarantee long life with low operating costs.

Engineered for performance, designed for comfort, built to last.

Power Train – Engine

The Cat[®] C18 Engine is built for power, reliability and efficiency.

ACERT™ Technology

The Cat C18 is U.S. EPA Tier 3 and EU Stage III compliant. It delivers higher power and greater durability for maximum hauling performance in the most demanding mining applications. Complete system integration of the engine and transmission optimizes performance and efficiency.

Power Increase

The 15.5% power increase over previous models provides unequalled lugging force during acceleration and less downshifting on grade. Improved software and updates in engine technology further improve transmission shifting and decrease fuel consumption.

Watercooled Turbocharged and ATAAC

Air-to-air aftercooling provides improved fuel economy by packing cooler, denser air into cylinders for more complete combustion of fuel and lower emissions.

Electronic Unit Injection (EUI)

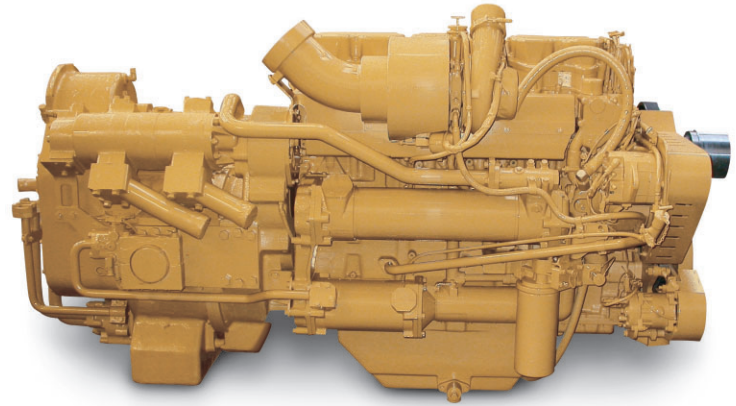
The electronically controlled unit injection fuel system senses operating conditions and regulates fuel delivery for optimum fuel efficiency. The proven high-pressure fuel system provides improved response times and more efficient fuel burn with lower emissions and less smoke.

Electronic Control Module (ECM)

ECM utilizes advanced engine management software to monitor, control and protect the engine utilizing self-diagnosing electronic sensors. The computerized system senses operating conditions and power requirements and adjusts engine for peak performance and most efficient operation at all times.

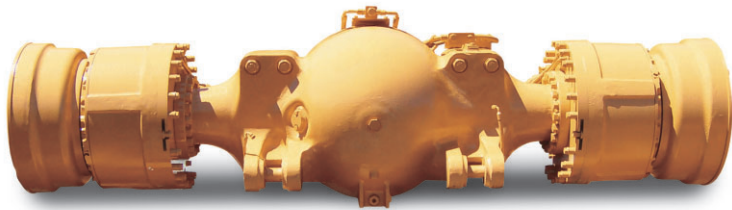
Design

Caterpillar designed one-piece cast iron block provides maximum strength and durability. Two-piece articulated pistons with forged steel crowns are designed to withstand higher cylinder pressure.



Power Train – Transmission

More power to the ground for greater productivity.



Mechanical Power Train

The Cat mechanical drive power train and power shift transmission provide unmatched operating efficiency and control on steep grades, in poor underfoot conditions, and on haul roads and drives with high rolling resistance.

Transmission

The Cat seven-speed planetary power shift transmission is matched with the direct-injection C18 engine with ACERT™ technology to deliver constant power over a wide range of operating speeds.

Robust Design

Designed for rugged underground mining conditions, the proven planetary power shift transmission is built for long life between overhauls.

Lock Up Torque Converter

Combines maximum rimpull and cushioned shifting of torque converter drive with the efficiency and performance of direct drive. When engaged, lock-up provides superior power train efficiency by delivering more power to the wheels.

Lock-Up Clutch

Quickly releases and re-engages to reduce power train torque loads for smoother shifting, long life and a more comfortable ride.

Smooth Shifting

Individual clutch modulation provides smooth clutch engagements to optimize performance and extend clutch life.

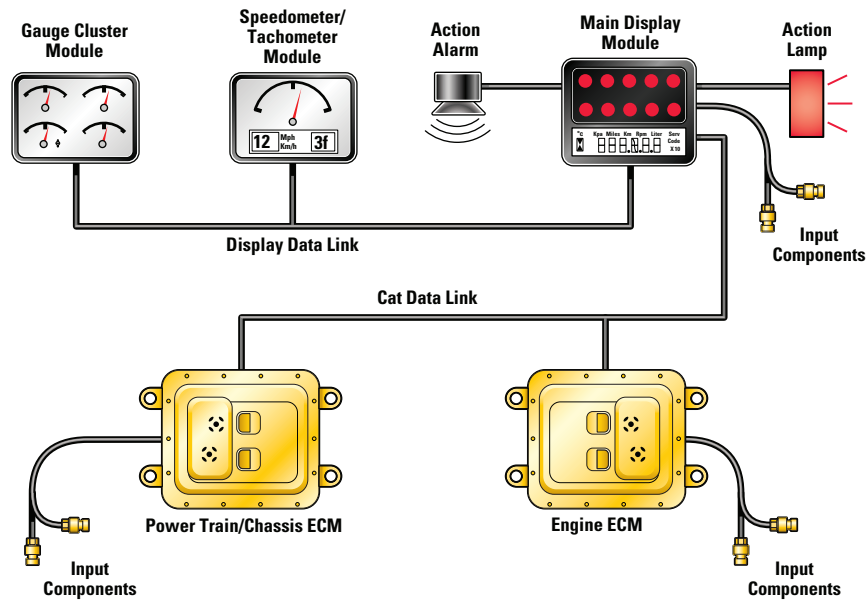
Final Drives

Cat final drives work as a system with the planetary power shift transmission to deliver maximum power to the ground. Built to withstand the forces of high torque and impact loads, final drives provide high torque multiplication to further reduce drive train stress.

Full Floating Axles

Full floating axles relieve internal stresses and increase durability. Rolled splines also provide increased service life.

CAT MONITORING SYSTEM



Engine/Power Train Integration

Intelligent electronics for overall optimal performance.

Cat Data Link

Electronically integrates machine computer systems to optimize overall power train performance, increase reliability and component life, and reduce operating costs.

- **Controlled Throttle Shifting**

Regulates engine RPM, torque converter lock-up and transmission clutch engagement for smoother shifts and longer component life.

- **Economy Shift Mode**

Decreases fuel consumption, lowers noise levels and potentially longer engine life.

- **Directional Shift Management**

Regulates engine speed to prevent damage caused by high speed directional changes.

- **Body-up Shift Inhibitor**

Prevents the transmission from shifting above a pre-programmed gear without the body fully lowered.

Electronic Technician (Cat ET)

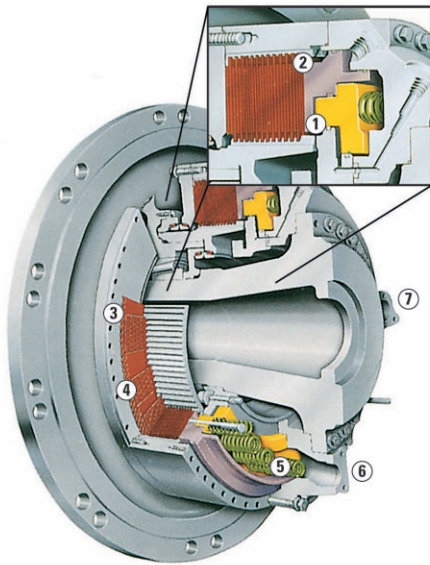
Cat ET service tool provides service technicians with easy access to stored diagnostic data through Cat Data Link to simplify problem diagnosis and increase availability.

Overspeed Protection

The transmission control electronically senses engine conditions and automatically up-shifts to prevent overspeeding.

Cat Brake System

Superior control for operator confidence.



- 1 Parking/Secondary Piston
- 2 Service/Retarding Piston
- 3 Friction Discs
- 4 Steel Plates
- 5 Actuating Springs
- 6 Cooling Oil In
- 7 Cooling Oil Out

Integrated Braking System

The Cat oil-cooled braking system delivers reliable performance and control in the most extreme underground mining conditions. The integrated system combines the service, secondary, parking brake and retarding functions in the same robust system for optimum braking efficiency.

Oil-Cooled Multiple Disc Brakes

Four-wheel, forced oil-cooled, multiple disc service brakes are continuously cooled by a water-to-oil heat exchangers for exceptional, non-fade braking and retarding performance.

Brake Design

Brakes are designed for reliable, adjustment-free operation and performance. Cat oil-cooled disc brakes are completely enclosed to prevent contamination and reduce maintenance.

Long Life

An oil film prevents direct contact between the discs. This design absorbs the braking forces by shearing the oil molecules and carrying heat away to extend brake life.

Automatic Retarder Control (ARC)

Electronically controls retarding on grade to maintain optimum engine RPM and oil cooling. Additional braking may be applied using the manual retarder or the brake pedal.

Faster Speeds

ARC allows the operator to maintain optimum engine speeds for faster downhill hauls and greater productivity.

Superior Control

Automatic brake modulation offers a smoother ride and greater control, allowing the operator to concentrate on driving.

Ease of Operation

ARC increases operating ease, resulting in greater operator confidence with less fatigue.

Engine Overspeed Protection

ARC automatically activates when engine speed exceeds factory preset levels, reducing potentially damaging engine overspeeds.

Fuel Efficiency

The engine provides additional retarding by running against compression on downhill hauls. The engine ECM reduces fuel injection for exceptional fuel economy.



Operator Comfort

Ergonomically designed for all-day comfort, control and productivity.

The AD45B operator station is ergonomically designed for total machine control in a comfortable, productive and safe environment. All controls, levers, switches and gauges are positioned to maximize productivity and minimize operator fatigue.

Protective Structure

Integral to the cab and frame, both the Rollover Protective Structure (ROPS) and Falling Objects Protective Structure (FOPS) are resiliently mounted to the mainframe to isolate the operator from vibration for a more comfortable ride.

Optional Enclosed Cab

Optional sound-suppressed ROPS cab provides a quiet, secure and comfortable air-conditioned working environment with fresh, pressurized, temperature-controlled air circulation.

Suspension Seat

Ergonomic, fully adjustable suspension seat provides optimal operator comfort. Thick cushions reduce pressure on lower back and thighs. Wide, retractable seat belts provide a secure, comfortable restraint.

Steering Column

Comfort wheel with tilt steering provides a comfortable driving position, secure grip and greater control.

Monitoring System

Cat Electronic Monitoring System (Cat EMS) continuously provides critical machine data to keep the machine performing at top production levels. Displays are backlit for easy viewing.

Truck Body Systems

Rugged performance and reliability in tough underground mining applications.



Cat Truck Bodies

Caterpillar offers two specific body styles for the most efficient hauling solutions at the lowest cost-per-ton.

- Dump Body
- Ejector Body

The ejector body can now be easily removed and a dump body fitted for greater machine versatility.

Body Selection

Selection of the right body depends on material, haul road, and dump conditions. The better the match of body to application, the greater the efficiency. Your Cat dealer can help you select the right body system for your site specific application.

Body Design

Cat truck bodies are designed for optimal strength, capacity and durability. Drawing on years of experience in truck body design, Cat Truck Bodies are designed for long service life and low cost per ton.

Body/Chassis Integration

Cat truck bodies are designed and matched with the integrated chassis system for optimum structural reliability, durability and long life.

Fast Hoist Cycle Times

Single-stage hoist cylinders provide fast dump cycle times of 16 seconds for raise and 21 seconds for lower.

Load Carrying Capacity

Large target area provides high load carrying capacity. Its diverging flow design gives clean load ejection, which maximizes production and avoids material carryback.

Truck Payload Management System (TPMS)

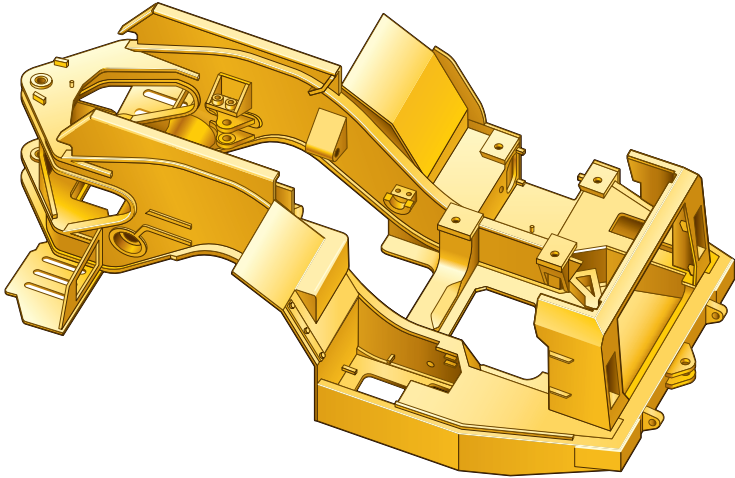
The optional TPMS system calculates the payload the truck is carrying and determines truck cycle times.

Ejector Body

The ejector body offers clean load ejection and the capability to work in areas with restricted overhead clearance and soft underfoot conditions.

Structures

Rugged Cat structures – the backbone of the AD45B's durability.



Frame Design

The frame uses box-section design with stiff frame beams to resist twisting forces. Materials and weld joints are matched to optimize the structural life of the frame.

Articulating/Oscillating Hitch

This system provides steering and oscillation and enables the truck to maintain all wheel ground contact in rough terrain.

Suspension System

Two independent variable rebound suspension cylinders dissipate haul road forces for longer frame life and a comfortable ride.

Serviceability

More time for production.

Service Access

Easy access to daily service points simplifies servicing and reduces time spent on regular maintenance procedures.

Ground-Level Access

Allows convenient servicing to tanks, filters, lubrication points and compartment drains.

Diagnostics

Electronic control system enables quick diagnosis of engine conditions and effective maintenance and repairs utilizing the Cat Electronic Technician (Cat ET) Service Tool.

Air Filters

Radial seal air filters are easy to change, reducing time required for air filter maintenance.

Sight Gauges

Makes fluid level checks quick and easy. These include the hydraulic, transmission and coolant reservoirs.

Sealed Electrical Connectors

Electrical connectors are sealed to lock out dust and moisture. Harnesses are covered for protection. Wires are color and number coded for easy diagnosis and repair.

Scheduled Oil Sampling

S•O•SSM helps avoid minor repairs becoming major ones.



Customer Support

Cat® dealer services keep underground mining equipment productive.



Cat dealers offer solutions, services and products that help lower costs, enhance productivity and manage your operation efficiently. From the selection of Cat equipment until the day you rebuild, trade or sell it, the support you get from your Cat dealer makes the difference that counts.

Dealer Capability

Cat dealers will provide the level of support you need, on a global scale. Dealer expert technicians have the knowledge, experience, training and tooling to handle your repair and maintenance needs, when and where you need them.

Product Support

When Cat products reach the field, they are supported 24/7 by a worldwide network of reliable and prompt parts distribution facilities, dealer service centers, and technical training facilities to keep your equipment up and running.

Service Support

Cat equipment is designed and built to provide maximum productivity and operating economy throughout its working life. Cat dealers offer a wide range of service plans that will maximize return on your investment, including:

- Preventive Maintenance Programs
- Diagnostic Programs, such as Scheduled Oil Sampling and Technical Analysis
- Rebuild and Reman Options
- Customer Support Agreements

Technology Products

Cat dealers offer a range of advanced technology products designed to improve efficiency, productivity and lower costs.

Operator Training

Today's complex products require operators have a thorough understanding of machine systems and operating techniques to maximize efficiency and profitability. Your Cat dealer can arrange training to improve productivity, decrease downtime, reduce operating costs, enhance safety, and improve your return on investment.

Application Awareness

Application and site-specific factors, such as: material density, loading position, grades, speeds, and haul road design influence operating and maintenance costs. Your Cat dealer can provide you with the understanding to optimize productivity and the total cost of ownership.

www.cat.com

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at www.cat.com.



Safety

Designed with safety as the first priority.

Product Safety

Caterpillar has been and continues to be proactive in developing mining machines that meet or exceed safety standards. Safety is an integral part of all machine and systems designs.

Engine Shutoff Switch

A secondary engine shutoff switch is located at ground level.

Integral ROPS Cab

Integral to the cab and frame, the ROPS is resiliently mounted to the frame to isolate the operator from vibration for a more comfortable ride.

Brake Systems

Four corner oil-cooled braking system provides excellent control. The service brakes and retarding system are actuated by modulated hydraulic pressure, while the parking brake function is spring applied and hydraulic released. This system assures braking in the event of loss of hydraulic pressure.

Operator Present System

Automatically engages parking brake, neutralizes steering, implement and transmission control, and shuts down the engine in the event the operator fails to apply the park brake prior to exiting the cab.

Standard Safety Features

Anti-skid upper deck surfaces, upper deck handrails, 3-point cabin and machine access, push out safety glass, excellent visibility, suspension seat, passenger/training seat, inertia reel retractable belts, steering frame lock, rear window guard, body retaining pins, automatic retarder control, exhaust heat shielding and firewall fitted standard, hitch hydraulic hoses – burst protection sleeves fitted, tailgate retaining pins (ejector body), alternate exit via windows, ground level compartment sight glasses, hot and cold side of engine.

SAFETY.CAT.COM™

For more complete information on safety, please visit www.safety.cat.com.

AD45B Underground Articulated Truck Specifications

Engine

Engine Model	Cat® C18 ACERT™	
Rated Power	2,000 rpm	
Gross Power – SAE J1995	439 kW	589 hp
Net Power – SAE J1349	414 kW	556 hp
Net Power – ISO 9249	414 kW	556 hp
Net Power – 80/1269/EEC	414 kW	556 hp
Bore	145 mm	5.7 in
Stroke	183 mm	7.2 in
Displacement	18.1 L	1,104.53 in ³

- Power ratings apply at a rated speed of 2,000 rpm when tested under the reference conditions for the specified standard.
- Ratings based on SAE J1995 standard air conditions of 25° C (77° F) and 100 kPa (29.61 Hg) barometer. Power based on fuel having API gravity of 35 at 16° C (60° F) and an LHV of 42 780 kJ/kg (18,390 BTU/lb) when engine used at 30° C (86° F).
- Engine derate will commence at an altitude of 2700 m (8,858 ft).
- Compliant with U.S. Environmental Protection Agency Tier 3 emissions standards.

Operating Specifications

Nominal Payload Capacity	45 000 kg	99,208 lb
Gross Machine Operating Weight	85 000 kg	187,393 lb

Weights

Empty	40 000 kg	88,184 lb
Front Axle	27 600 kg	60,847 lb
Rear Axle	12 400 kg	27,337 lb
Loaded	85 000 kg	187,393 lb
Front Axle	38 760 kg	85,451 lb
Rear Axle	46 240 kg	101,942 lb

Weight Distribution

Empty		
Front Axle	69%	
Rear Axle	31%	
Loaded		
Front Axle	45.6%	
Rear Axle	54.4%	

Transmission

Forward 1	8 km/h	4.9 mph
Forward 2	10.9 km/h	6.8 mph
Forward 3	15.1 km/h	9.4 mph
Forward 4	20.6 km/h	12.8 mph
Forward 5	28.1 km/h	17.4 mph
Forward 6	38.1 km/h	23.7 mph
Forward 7	52 km/h	32.3 mph
Reverse 1	7.5 km/h	4.6 mph
Reverse 2	10.1 km/h	6.3 mph

- Maximum travel speeds with standard 29.5 × R29 tires.

Final Drives

Differential Ratio	3.46:1
Final Drive Ratio	5.65:1
Total Reduction Ratio	19.55:1

Body Hoist

Raise	16 Seconds
Lower	21 Seconds
Total Cycle Time	37 Seconds

Body Capacities

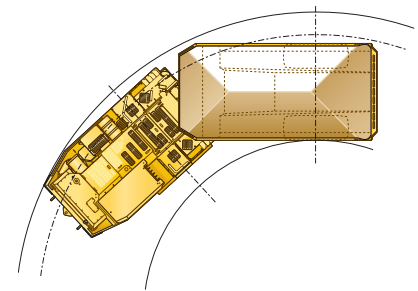
Dump Body 1	18.0 m ³	23.6 yd ³
Dump Body 2	21.3 m ³	27.9 yd ³
Dump Body 3	25.1 m ³	32.8 yd ³
Ejector Body	22.9 m ³	29.9 yd ³

- Heaped SAE 2:1.

Turning Dimensions

Outside Clearance Radius*	9291 mm	365.8 in
Inside Clearance Radius*	5310 mm	209 in
Frame Oscillation	10°	
Articulation Angle	42.5°	

* Clearance dimensions are for reference only.



Service Refill Capacities

Engine Crankcase with Filter	64 L	16.9 gal
Transmission	60 L	15.9 gal
Hydraulic Tank	266 L	70.3 gal
Cooling System	85 L	22.5 gal
Front Differentials and Final Drives	77 L	20.3 gal
Rear Differentials and Final Drives	83 L	21.9 gal
Fuel Tank	764 L	201.8 gal

Tires

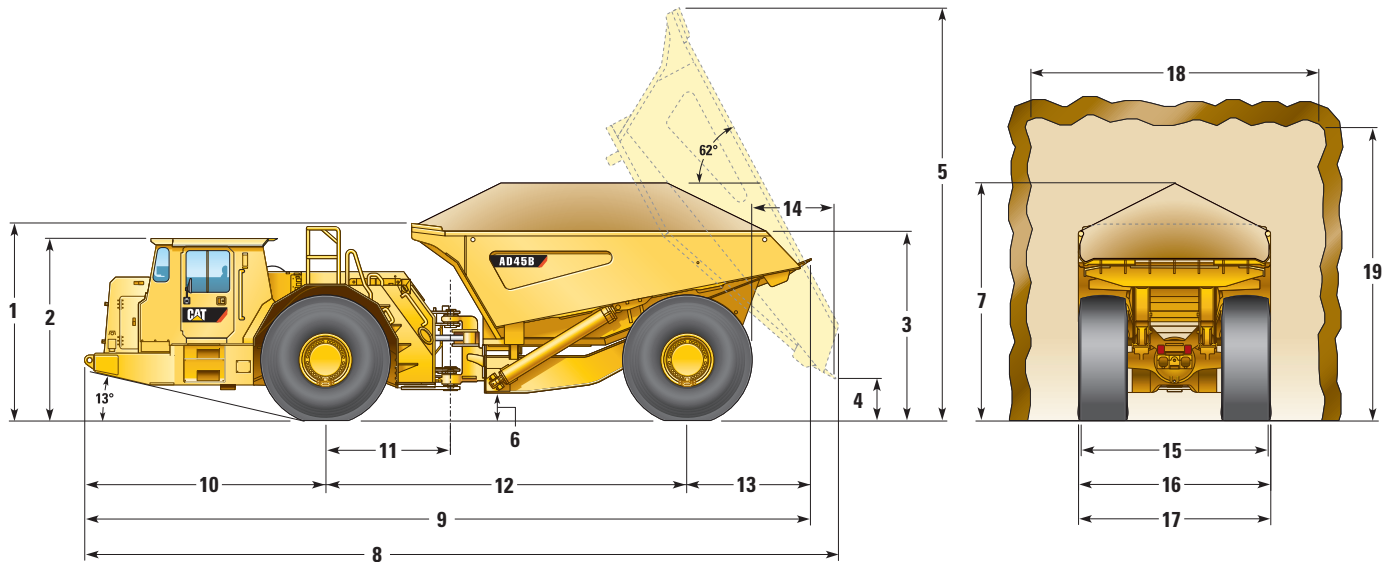
Tire Size	29.5 × R29
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Standards

Brakes	ISO 3450, AS2958.1, CAN-CSA424.30-M90
Cab/FOPS	ISO 3449, SAE J231, AS2294.3, EN13627
Cab/ROPS	ISO 3471, SAE J1040, AS2294.2, EN13510

Dimensions

All dimensions are approximate.



	313-2820		258-1103		274-4030		275-9681	
	Dump Body		Dump Body		Dump Body		Ejector Body	
Body Capacity	18 m ³	23.5 yd ³	21.3 m ³	27.9 yd ³	25.1 m ³	32.8 yd ³	22.9 m ³	29.9 yd ³
	mm	in	mm	in	mm	in	mm	in
1 Height – Top of Empty Body	2831	111.5	3036	119.5	3181	125.2	3463	136.3
2 Height – Top of ROPS	2817	110.9	2817	110.9	2817	110.9	2817	110.9
3 Height – Body Loading	2720	107.1	2925	115.2	3070	120.9	3179	125.2
4 Height – Dump Clearance**	665	26.2	665	26.2	665	26.2	1001	39.4
5 Height – Top of Raised Body	6012	236.7	6357	250.3	6603	260.0	—	—
6 Height – Ground Clearance	441	17.4	441	17.4	441	17.4	441	17.4
7 Height – Top of Load (SAE 2:1)	3610	142.1	3655	143.9	3705	145.9	3705	145.9
8 Length – Max Body Raised	11 561	455.2	11 622	457.6	11 682	459.9	11 561	455.2
9 Length – Overall Body Down	11 194	440.7	11 194	440.7	11 194	440.7	11 194	440.7
10 Length – Front Axle to Front Bumper	3718	146.4	3718	146.4	3718	146.4	3718	146.4
11 Length – Front Axle to Hitch	1920	75.6	1920	75.6	1920	75.6	1920	75.6
12 Length – Wheel Base	5570	219.3	5570	219.3	5570	219.3	5570	219.3
13 Length – Rear Axle to Tail	1906	75.0	1906	75.0	1906	75.0	2017	79.4
14 Length – Rear Wheel to Raised Body	1268	49.9	1268	49.9	1268	49.9	946	37.2
15 Width – Overall Tire	3000	118.1	3000	118.1	3000	118.1	3000	118.1
16 Width – Machine with Body	3000	118.1	3000	118.1	3200	126.0	3200	126.0
17 Width – Machine without Body	3000	118.1	3000	118.1	3000	118.1	3000	118.1
18 Recommended Clearance Width*	4500	177.2	4500	177.2	4500	177.2	4500	177.2
19 Recommended Clearance Height*	4500	177.2	4500	177.2	4500	177.2	4500	177.2

* Clearance dimensions are for reference only.

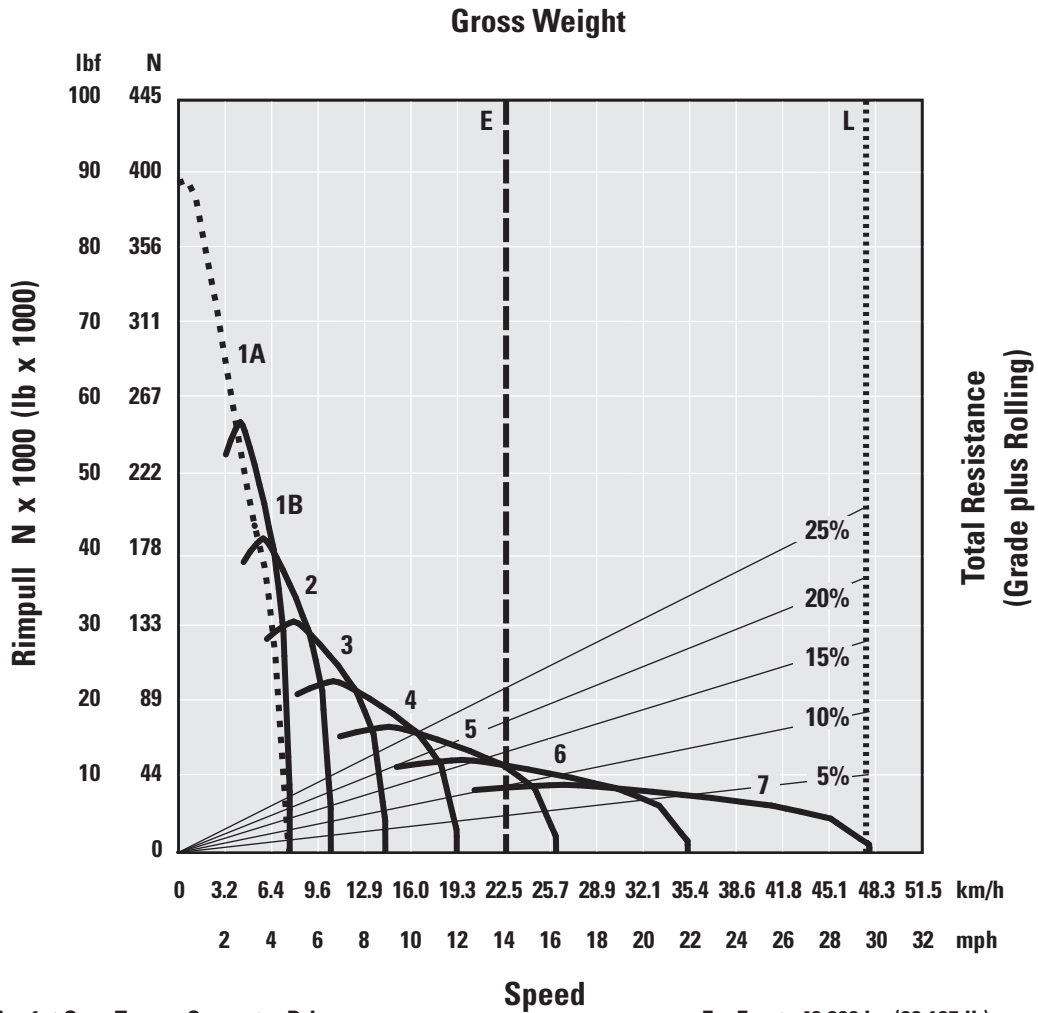
** Measurement taken with tailgate down for ejector body.

AD45B Underground Articulated Truck Specifications

Gradeability/Speed/Rimpull

To determine gradeability performance: Read from gross weight down to the percent of total resistance. Total resistance equals actual percent grade plus rolling resistance; as a general guide use 2% for rolling resistance in underground application or refer to the Caterpillar Performance Handbook. From the total resistance point, read horizontally to the curve with the highest obtainable gear, then down to maximum speed. Usable rimpull will depend upon traction available and weight on drive wheels.

- Typical Field Empty Weight
- Loaded Weight



- 1A – 1st Gear Torque Converter Drive
- 1B – 1st Gear Direct Drive
- 2 – 2nd Gear Direct Drive
- 3 – 3rd Gear Direct Drive
- 4 – 4th Gear Direct Drive
- 5 – 5th Gear Direct Drive
- 6 – 6th Gear Direct Drive
- 7 – 7th Gear Direct Drive

- E – Empty 40 000 kg (88,185 lb)
- L – Loaded 85 000 kg (187,393 lb)

AD45B Standard Equipment

Standard equipment may vary. Consult your Cat dealer for details.

ELECTRICAL

Alternator, 95 amp
Reversing alarm
Reversing lights
Headlights with dimmer switch
Rear work light (cab mounted)
Cat Electronic Monitoring System (Cat EMS)
Ground level disconnect switch (2 post)
Jump start receptacle
Brake and tail light
Ground level shutdown switch
Corrosive protection spray
24V electric starting

OPERATOR ENVIRONMENT

Open ROPS/FOPS operator station
Suspension operator seat with retractable seat belt
Tilt/telescopic steering wheel
Rearview mirrors
Trainer/passenger seat and seat belt
Operator Present System

POWER TRAIN

6 cylinder C18 ACERT™ ATAAC diesel engine
Long life coolant
Automatic retarder control
All wheel disc brakes (oil cooled)
Parking brakes (four wheels)
Autoshift transmission 7 speed forward/ 2 speed reverse
Torque converter with automatic lockup
Control throttle shifting
Programmable ground speed limiting
Programmable gear blockout with body up
Engine air intake pre cleaner
Four wheel drive

OTHER STANDARD EQUIPMENT

Belly guards
29.5 × R29 VSNT radial tires
Front and rear tow pin
Articulated and oscillated hitch
Exhaust catalytic converter/muffler
Body-up alarm
Centralized lubrication points
Frame lifting lugs
Exhaust covers
Dump body (21.3 m³ – 27.9 yd³)
Firewall
Front axle suspension
Front rubber bumpers

AD45B Optional Equipment

Optional equipment may vary. Consult your Cat dealer for details.

Air Conditioned Cab, ROPS/FOPS

Windshield Wiper Water
Window, Sliding Operator
Heater, Cab

Automatic Lubrication System

Bodies

Body, (18.0 m³ – 23.6 yd³)
Body, (25.1 m³ – 32.8 yd³)
Ejector, (22.9 m³ – 29.9 yd³)
Body Liners, Heavy Duty

Camera/Monitor, Reversing

Fast Fill System

Coolant
Engine

Fuel
Hydraulic

Transmission

Fire Extinguisher, Hand Held

Fire Suppression System
Secondary Steering, Ground Driven

EAM (Electronic Access Module)

TPMS (Truck Payload Measurement System)

Brake Oil Pressure Gauges

AD45B Underground Articulated Truck

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at www.cat.com

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Materials and specifications are subject to change without notice. Featured machines in photos may include additional equipment. See your Cat dealer for available options.

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Replaces AEHQ6325

