785C

Mining Truck

Engine		
Engine Model	Cat® 3512B-EUI	
Gross Power – SAE J1995	1082 kW	1,450 hp
Net Power	1005 kW	1,348 hp
Weights – Approximate		
Gross Machine Operating Weight	249 480 kg	550,000 lb
Operating Specifications		
Nominal Payload Capacity	136 tonnes	150 tons

785C Mining Truck

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

Power Train – Engine

The Cat® 3512B engine delivers the power and reliability necessary to perform in the most demanding applications. Designed for efficient operation, the 3512B offers excellent fuel efficiency, lower emissions, reduced engine noise and lower operating costs. **pg. 4**

Power Train – Transmission

The Cat six-speed power shift transmission and mechanical power train, matched with the electronic unit injection 3512B engine, provides consistent power and efficiency for peak power train performance. **pg. 5**

Engine/Power Train Integration

The Cat Data Link electronically combines engine, transmission, brake and operational information to optimize overall truck performance. Stored diagnostic data can be accessed via the Cat Electronic Technician (Cat ET) to improve troubleshooting and reduce downtime. **pg. 6**

Monitoring System

VIMS™ monitoring system provides operators, service technicians and managers with vital machine health and payload data to keep the 785C performing at peak efficiency and top production levels while lowering cost-per-ton. **pg. 12**

Truck Body Systems

A variety of Caterpillar designed and built truck bodies ensure optimal performance and reliability in tough mining applications. Cat dealers can help build an optimum hauling system to maximize truck payloads and extend body and truck wear life. **pg. 14**

Top Performance.
Developed specifically for high production mining and construction applications, the 785C Mining Truck keeps material moving at high volume to lower your cost-per-ton.

Reliable, Durable Operation.
Rugged construction and easy maintenance procedures ensure long life with low operating costs.

Structures

Caterpillar® truck frames are built to optimize torsional load displacement. Mild steel provides flexibility, durability and resistance to impact loads. Castings and forgings in high stress areas provide exceptional strength and durability for long life. **pg. 8**

Operator's Station

The ergonomic cab is designed for operator comfort and ease of operation to allow the operator to focus on production. Controls and gauges are positioned within easy reach for optimum efficiency and superior control. **pg. 9**

Caterpillar® Brake System

Cat oil-cooled, multiple disc brakes offer exceptional, fade-resistant braking and retarding for maximum performance and productivity in all haul road conditions. Integrated Braking Control combines retarding and traction control into one system for optimum braking efficiency. **pg. 10**

Serviceability

The 785C is designed for quick and easy servicing. Simplified service and maintenance features reduce downtime, allowing the machine to spend less time being serviced and more time on the haul roads. **pg. 16**

Customer Support

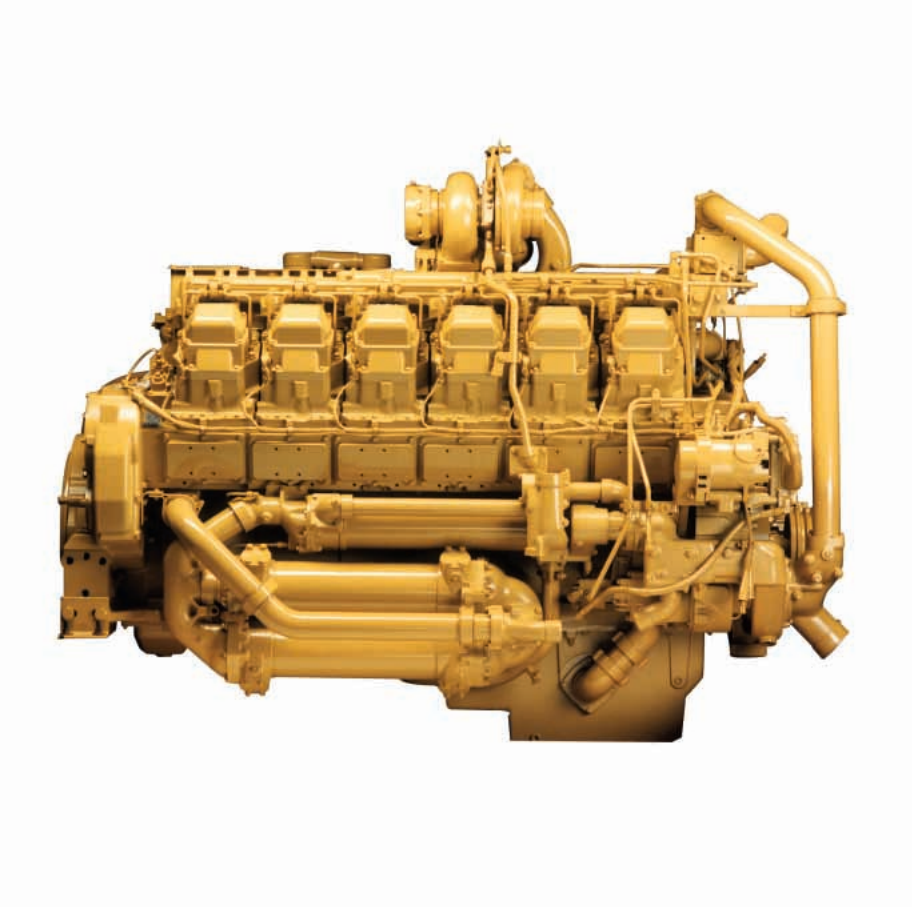
Caterpillar dealers provide unmatched product support, anywhere in the world. With industry-best parts availability and a wide range of maintenance and service options, Cat dealers have what it takes to keep your mining machines productive. **pg. 17**

Safety

Caterpillar sets the standard when it comes to safety in the design and manufacturing of heavy equipment for the mining industry. Safety is not an afterthought at Caterpillar, but an integral part of all machine and systems designs. **pg. 18**

Power Train – Engine

The Cat® 3512B EUI twin turbocharged and aftercooled diesel engine delivers high power and reliability in the world's most demanding mining applications.



Engine. The Cat® 3512B EUI twin turbocharged and aftercooled diesel engine delivers high power and reliability in the world's most demanding mining applications.

Design. The 3512B is a 12-cylinder, four-stroke design that uses long, effective power strokes for more complete fuel combustion and optimum fuel efficiency.

EPA Compliant. The 3512B engine is compliant with U.S. Environmental Protection Agency Tier 1 emissions standards.

Altitude Compensation. Designed for maximum operating efficiencies at altitudes under 3048 m (10,000 ft).

High Torque Rise. The 23 percent net torque rise provides unequalled lugging force during acceleration, on steep grades and in rough underfoot conditions. Torque rise effectively matches transmission shift points for maximum efficiency and fast cycle times.

Enhanced Life. High displacement, low rpm rating and conservative horsepower ratings mean more time on the haul roads and less time in the shop.

Single-Piece Piston Design. New single-piece forged steel pistons with integrated forged steel skirt are more robust to withstand high engine heat and pressure and enable enhanced combustion efficiency, improved fuel efficiency and lower emissions. Corrosion resistant, stainless steel top ring reduces ring, groove and liner wear for greater reliability and longer life.

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). 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 and at all times.

Separate Circuit Aftercooler. Allows the aftercooler circuit to operate cooler than jacket water temperature for a denser air charge and greater combustion.

Oil Renewal System. Optional oil renewal system extends engine oil change intervals from 500 hours to 4,000 hours or more to increase machine availability and reduce costs.

Engine Protection. Computerized system electronically protects the engine during cold starts, high altitude operation, air filter plugging, and high exhaust temperature.

Power Train – Transmission

Cat mechanical power train delivers more power to the ground for greater productivity and lower operating costs.

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

1) Transmission. The Cat six-speed planetary power shift transmission is matched with the direct-injection 3512B diesel engine to deliver constant power over a wide range of operating speeds.

Robust Design. Designed for the higher horsepower of the 3512B engine, the proven planetary power shift transmission is built tough for long life between overhauls.

Long Life. A dedicated oil tank and circuit provides cooler, cleaner oil for maximum performance and longer component life.

Transmission Chassis Control (TCC). TCC uses electronically transferred engine rpm data to execute shifts at preset points for optimum performance, efficiency and clutch life.

2) Lock-Up Torque Converter. Combines maximum rimpull and cushioned shifting of torque converter drive with the efficiency and performance of direct drive. Engages at approximately 8 km/h (5 mph), 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.

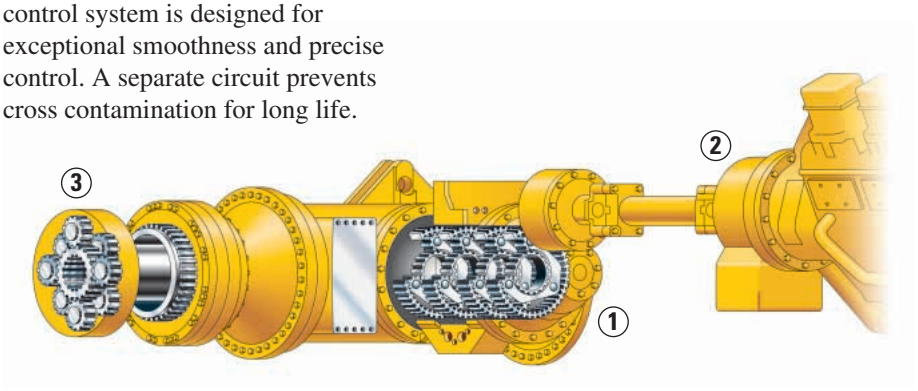
Smooth Shifting. Individual clutch modulation provides smooth clutch engagements to optimize performance and extend clutch life.

3) 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, double reduction final drives provide high torque multiplication to further reduce drive train stress.

Steering System. Hydraulic steering control system is designed for exceptional smoothness and precise control. A separate circuit prevents cross contamination for long life.

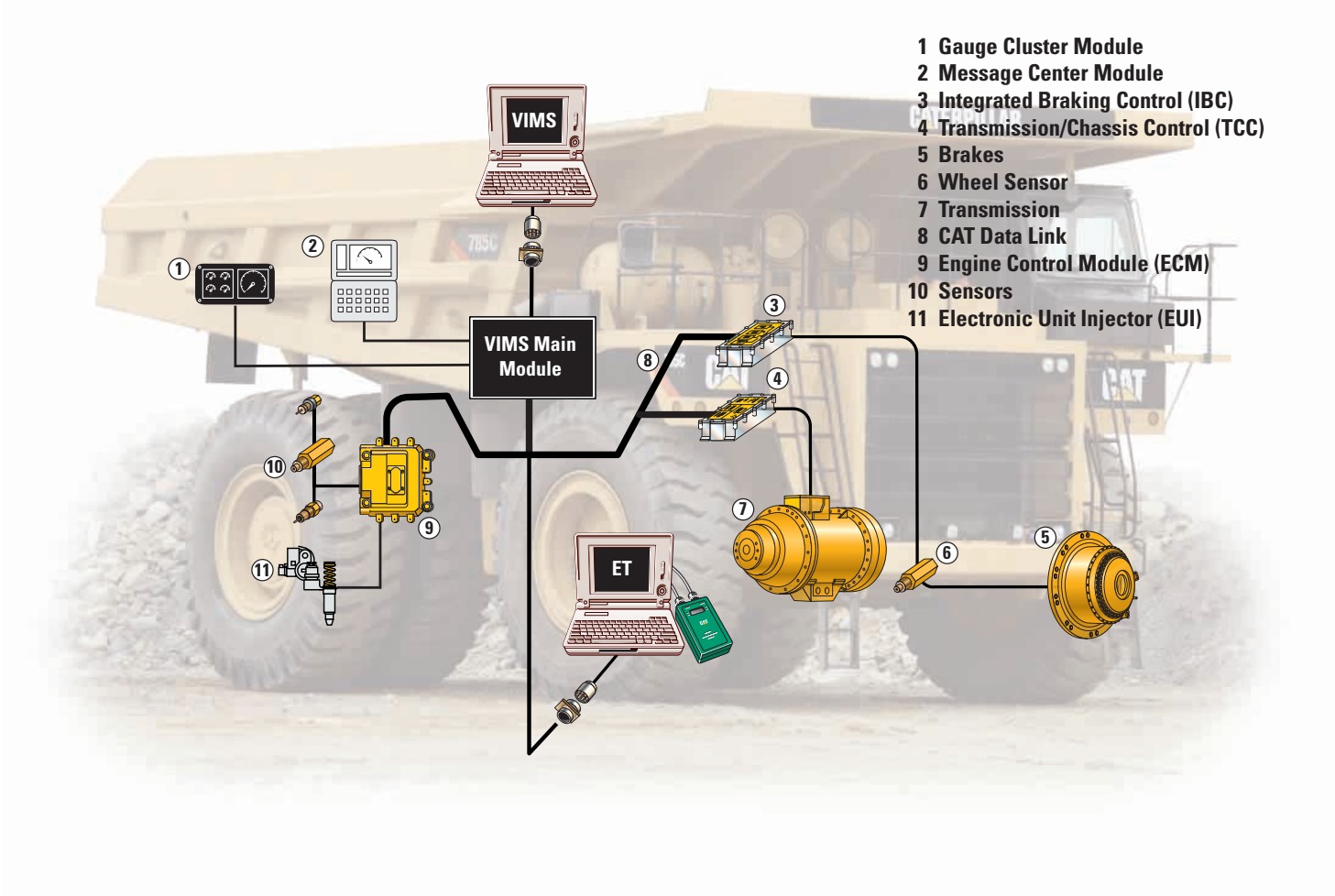
Supplemental Steering. Supplemental steering system uses pressure accumulators and allows up to three 90-degree turns in case of engine failure.

Wheels and Rims. Cast rear wheels and Cat center-mount rims are mounted using studs and nuts to minimize maintenance and maximize durability.



Engine/Power Train Integration

Electronically combines critical power train components to work more intelligently and to optimize overall truck 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 during shifting to reduce power train stress and clutch wear by controlling engine speed, torque converter lock-up and transmission clutch engagement for smoother shifts and longer component life.

Directional Shift Management. Regulates engine speed during directional shifts to prevent damage caused by high-speed directional changes.

Neutral Coast Inhibitor. Prevents transmission from shifting to neutral at speeds above 6.5 km/h (4 mph) to protect the transmission from operating with insufficient lubrication.

Body-up Reverse Neutralizer. Automatically shifts the transmission to neutral if the hoist lever is activated while transmission is shifted in reverse.

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

Overspeed Protection. The transmission control electronically senses engine conditions and automatically up-shifts one gear to prevent overspeeding. If overspeeding occurs in top gear, the lock-up clutch is disengaged.

Programmable Top Gear. Transmission top gear maximum can be set using the Cat ET service tool to help the operator maintain speed limits.

Anti-Hunt Function. Minimizes shifting by not allowing the transmission to up or down shift immediately after a shift has occurred. This prevents transmission shifting for increased component life.

Downshift Inhibitor. Prevents engine overspeeding by keeping the transmission from downshifting until engine speed reaches the downshift point.

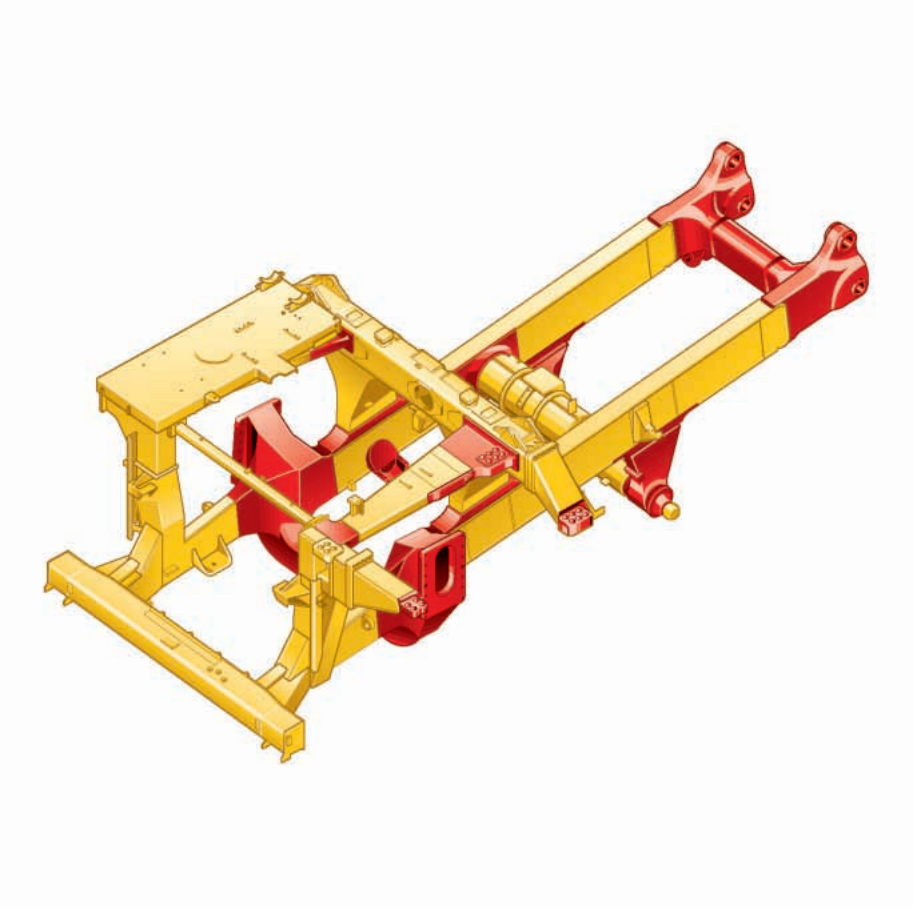
Electronic Technician (Cat ET). Cat ET service tool provides service technicians with easy access to stored diagnostic data through the Cat Data Link to simplify problem diagnosis and increase machine availability.

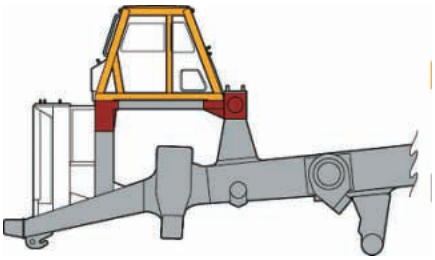
Diagnostic Capability. Critical data from the electronic engine and transmission controls, including transmission shifting, engine speed and fuel consumption, provides service technicians with enhanced diagnostic capability to reduce downtime and operating costs.

Integrated Braking Control (IBC). IBC integrates Automatic Retarder Control and Traction Control into one system for optimum performance and efficiency.

Structures

Rugged Cat structures are the backbone of the 785C mining truck's durability.





Integral Four-Post ROPS Cab. Resiliently mounted to the main frame to reduce vibration and sound, the integral ROPS is designed as an extension of the truck frame. The ROPS/FOPS structure provides "five-sided protection" for the operator.

Suspension System. Designed to dissipate haul road and loading impacts for longer frame life and a more comfortable ride.

Cylinders. Four independent self-contained, oil pneumatic, variable-rebound suspension cylinders are designed to absorb shocks in the most severe applications.

Durable Design. Rugged cylinders utilize large diameter bore and low-pressure nitrogen/oil design for long life with minimal maintenance.

- **Front.** Front cylinders with preset caster and camber are mounted to the frame and serve as steering kingpins for a tight turning radius with excellent maneuverability and low maintenance.
- **Rear.** Rear cylinders allow axle oscillation and absorb bending and twisting stresses caused by uneven and rough haul roads rather than transmitting them to the main frame.

Box-Section Design. The 785C frame uses a box-section design, incorporating two forgings and 21 castings in high stress areas with deep penetrating and continuous wrap-around welds to resist damage from twisting loads without adding extra weight.

Steel Structures. Mild steel used throughout frame provides flexibility, durability and resistance to impact loads, even in cold climates, and allows for easy field repairs.

Castings. Castings have large radii with internal reinforcing ribs to dissipate stress in areas of high stress concentration. Castings move welds to lower stress areas for greater frame life.

Serviceability. The open box-section frame design allows easy access to power train components, reducing overall removal and installation time, and lowering overall repair costs. The raised and pinned body allows excellent access to the transmission.

Operator's Station

Ergonomically designed for operator comfort, superior control and high productivity.

Ergonomic Layout. The 785C 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.

Quiet Cab. Integral, sound-suppressed ROPS/FOPS cab is resiliently mounted to the mainframe to isolate the operator from sound and vibration for a quiet, secure and comfortable ride.

Viewing Area. Designed for excellent all-around visibility and clear sight lines to the haul road, the large viewing area enables the operator to maneuver with confidence for high productivity.

1) Air Suspension Seat w/Three-Point Operator Restraint. Ergonomically designed, fully adjustable air suspension seat with adjustable armrests provides optimal driving comfort. A wide, retractable three-point seat/shoulder belt provides a secure, comfortable restraint.

2) Hoist Levers. Four-position, low effort electronic hoist control system with fingertip control is mounted next to the operator's seat for ease of operation.

3) Secondary Brake Pedal. Conveniently located on the floor for easy operator control.

4) Monitoring System. The VIMS monitoring system features an easy-to-read display and easy-to-use operator input keypad for precise machine status information.

5) Steering Column. Comfort wheel with tilt and telescoping steering features provide a comfortable driving position.

6) Transmission Console. Ergonomic gearshift lever with backlit gear indicators optimize efficiency.

7) Parking Brake Reset Valve. Parking brake cannot be released when air system is drained until valve button is reset.

8) Storage Compartment. Located under the trainer seat for a safe, uncluttered working environment.

9) Trainer Seat. Full-size, fully padded trainer seat features a backrest, wide hip and shoulder room, and seat belt for secure travel. Air-suspension, optional.

10) Operator Window. Powered operator window and sliding trainer seat window offer simple operation and an unobstructed view.

11) Operator Controls. Easy to reach turn signal, high beam, intermittent windshield wiper and windshield washer controls are designed for optimum efficiency and comfort.

12) Heating/Air Conditioning. Efficient design provides fresh, pressurized, temperature-controlled air circulation for a comfortable working environment in any climate.

13) Radio Ready. Cab is prewired with power converter, speakers, wiring harness, antenna and provision for add-on communication systems.

Caterpillar® Brake System

Reliable braking with superior control gives the operator the confidence to focus on productivity.

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

Cat Data Link. All control modules communicate via the Cat Data Link and work together as an integrated system to maximize production efficiency and extend component life.

Oil-Cooled Multiple Disc Brakes. Caterpillar four-wheel, forced oil-cooled, multiple disc service brakes are continuously cooled by water-to-oil heat exchangers for exceptional, non-fade braking and retarding performance.

Optional Extended Life Disc Brakes. Extended life friction material has double the wear life of standard brakes and is twice as resistant to glazing for more consistent braking power with less noise.

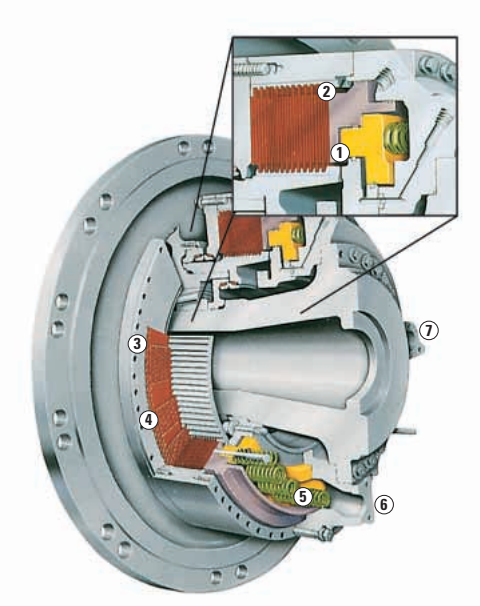
Brake Design. Cat oil-cooled disc brakes are designed with large discs and plates for reliable, adjustment-free operation and performance. Brakes are completely enclosed and sealed to prevent contamination and reduce maintenance.

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.

Pistons. The Caterpillar two-piston design combines the service, secondary, parking brake and retarding functions in the same system. The primary piston hydraulically actuates both service and retarding functions. The secondary piston is spring-applied and held in the disengaged position by hydraulic pressure. If hydraulic system pressure drops below a specified level, the spring-applied secondary piston automatically applies the brakes.

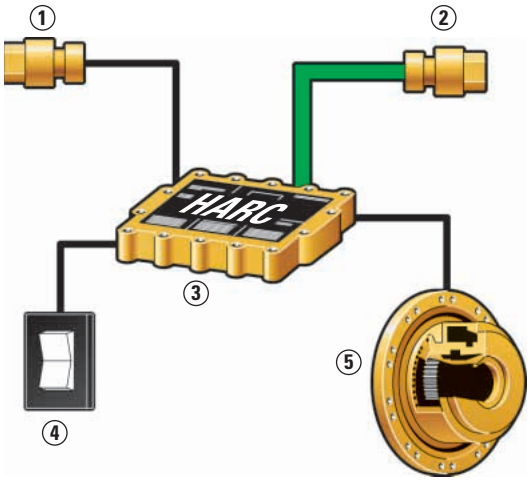
Parking Brake. Oil-cooled, spring-applied, hydraulically released parking brake is applied to all four wheels for superior parking capability on all grades up to 15 percent.

Hydraulic Automatic Retarder Control (HARC). Hydraulically activated automatic retarder control system 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. HARC is deactivated when the operator applies the brakes or accelerator controls.



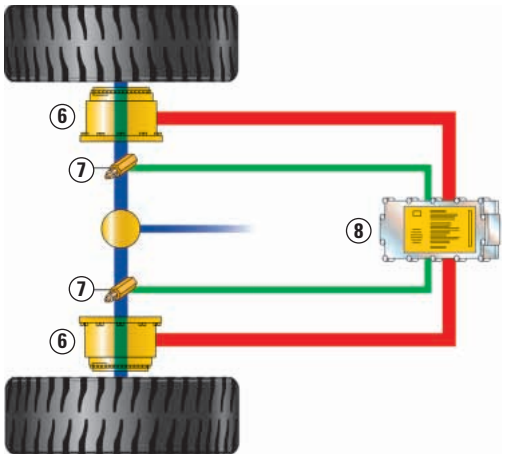
1 Parking/Secondary Piston
2 Service/Retarding Piston
3 Friction Discs
4 Steel Plates
5 Actuating Springs
6 Cooling Oil In
7 Cooling Oil Out

HARC



1 Service Brake Sensor
2 Engine Sensor
3 HARC
4 HARC Switch
5 Brakes
6 Service Brakes
7 Axle Speed Sensor
8 TCS

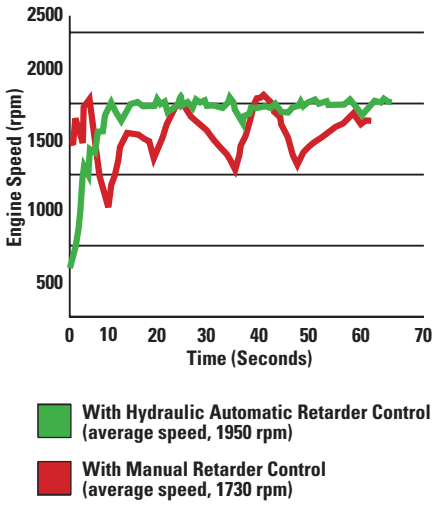
TCS



HARC vs. ARC.

- Less chance for engine overspeed
- Smoother engagement
- No loping
- Less demand on air system
- Reduces operating costs

HARC Production Advantages.



Faster Speeds. HARC 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 better control in slippery conditions, allowing the operator to concentrate on driving.

Ease of Operation. HARC increases operating ease, resulting in greater operator confidence with less fatigue.

Engine Overspeed Protection. Automatically activates HARC when engine speed exceeds factory-preset levels, regardless of operator inputs, to avoid potentially damaging engine overspeeds.

Four Corner Retarding. Four corner retarding with 60/40 percent split (rear/front) in braking effort provides superior control in slippery conditions. Balanced front to rear brake torque provides exceptional braking performance and minimizes wheel lock-up, especially during retarding.

Traction Control System (TCS). Electronically monitors and controls rear wheel slippage for greater traction and enhanced truck performance in poor underfoot conditions. If slippage exceeds a set limit, the oil-cooled disc brakes engage to slow the spinning wheel. Torque is then automatically transferred to the wheel with better traction.

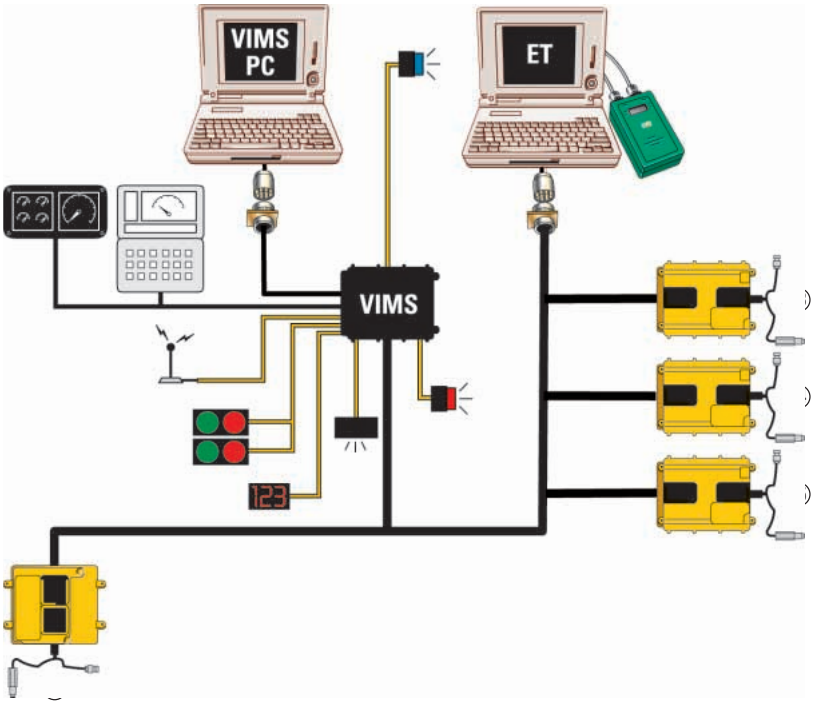
Differential Action. Normal differential action provides superior maneuvering and control in slippery conditions.

Integrated Braking Control (IBC). Combines Hydraulic Automatic Retarder Control (HARC) and Traction Control System (TCS) into one integrated brake control system for optimum efficiency, performance and reliability.

Fuel Efficiency. The engine provides additional retarding by running against compression on downhill hauls. During retarding applications the engine ECM does not inject fuel into the cylinders for exceptional fuel economy.

Monitoring System

Vital machine health and payload data keeps the 785C performing at peak production levels.



1 Gauge Cluster
2 Message Center and Keypad
3 ADEM™ III Engine Control Module
4 CAT Data Link
5 Action Alarm
6 Action Lamp
7 Payload Lamps
8 Payload Display (optional)
9 Radio System (optional)
10 Data Port (VIMS-PC)
11 Service Lamp
12 Diagnostic Connector (ET)
13 Integrated Brake Control (IBC) Module
14 Transmission/Chassis Control (TCC) Module
15 Road Analysis Control (RAC) Module (optional)

VIMS Monitoring System. Intelligent Caterpillar designed machine monitoring system provides critical machine health and payload data in real-time to keep the 785C performing at top production levels.

Integrated System Monitoring. Sensors located throughout the machine systems enable the VIMS monitoring system to quickly exchange and monitor information from all machine systems for efficient, high performance operation.

Advanced Diagnostics. VIMS monitoring system simplifies troubleshooting, reduces downtime and lowers operating costs by identifying abnormal conditions before they cause extensive damage.

Data Access. Monitoring and diagnostic information is stored on-board until it can be downloaded for analysis. Data can be accessed through the message center, transmitted via optional radio or downloaded onto a computer for detailed analysis.

Machine Management. Service technicians or mine personnel can download data and generate reports for better machine personnel. Data can be used to improve effectiveness of scheduled maintenance programs, maximize component life, improve machine availability, and lower operating costs.

Speedometer/Tachometer Module. Monitors three systems: engine speed, ground speed and gear indicator.

Gauge Cluster. Conveniently located gauge cluster maintains a constant display of vital machine functions, including:

- engine coolant temperature
- brake oil temperature
- air system pressure
- fuel level

Keypad. Provides operator or service technician immediate access to current machine information, gauge values and stored data through the message center display.

Message Center. Displays messages requested by operator and advises operator of abnormal machine conditions.

Alert System. Three-category warning system alerts operator of abnormal machine health conditions.

- **Category I.** Machine or system needs attention.
- **Category II.** Requires operator to evaluate and correct situation before continuing work.
- **Category III.** Immediate shutdown required to prevent serious damage to machine or system.

Data Storage. VIMS monitoring system stores payload information, which is used to manage production. The system stores up to 2,400 production cycles for a complete record of payload weight, cycle times, distances and actual dates/times. It also allows storage of maintenance data such as Events, Trends, Histograms, Cumulatives, Snapshot and Dataloggers. This data allows the user to identify potential problems before they occur, utilizing the efficiency of Preventative Maintenance.

Production Management. Production Management enhances truck/loading tool effectiveness, improves fleet productivity and helps extend the life of truck frames, tires, rims and power train components, while lowering operating and maintenance cost.

Payload Management. Max Payload Speed Manager is a feature that aids in managing the Caterpillar 10/10/20 Overload Policy. Based on target payload weight and overload settings, the VIMS system logs and warns the operator when the truck reaches overload after second gear reweigh. The truck will be limited to second gear at 1,750 rpm, and the automatic retarder speed setting is reduced to 1,750 rpm until the load is dumped.

Payload management enables the manager to enhance truck/loading tool effectiveness and productivity levels by preventing overloads that can cause damage to component life and affect operator safety.

The chart below illustrates the benefit of managing payloads with VIMS production management tools.

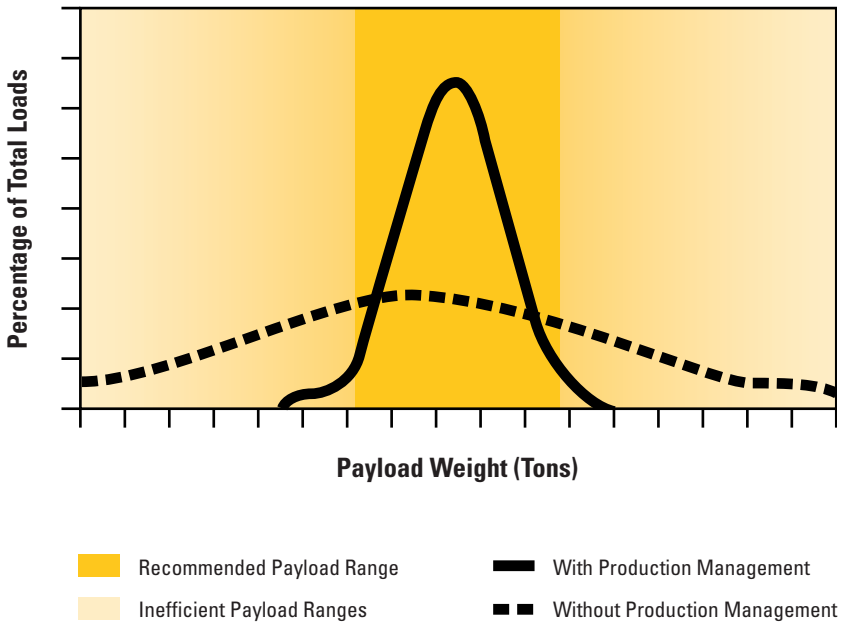
External Payload Indicators. External lights on both sides of the truck signals loading tool operator when to cease loading for optimum payloads without overloading. Optional external payload displays with digital numeric monitors are available to replace the standard red/green indicator lamps.

Road Analysis Control (RAC). Optional system monitors haul road conditions by measuring frame rack and pitch to improve haul road maintenance, cycle times, tire life and fuel efficiency.

VIMS-PC. VIMS-PC, the off-board reporting software program, allows service personnel to download a complete record of machine health and productivity data to a laptop computer for diagnosis and analysis. Easy-to-use software enables service technicians and mine management to generate health and payload reports for more effective machine management.

VIMS Supervisor. Optional software allows mine management to easily manage and interpret VIMS data for optimum fleet management and productivity.

Payload Weight Distribution



Truck Body Systems

Cat designed and built for rugged performance and reliability in the toughest mining applications.

Cat Truck Bodies. Matching the truck body to the application is a critical part of achieving the best value from your 785. Caterpillar offers five body choices to achieve the best match.

- Dual Slope Body
- Mine Specific Design (MSD II) Body
- Gateless Coal Body
- Caterpillar "X" Body
- Flat Floor Body

Body/Chassis Integration. Caterpillar engineers have developed the most comprehensive suite of dynamic analysis tools in the industry and design the body always keeping in mind the interaction of the body with the rest of the Mining Truck System. No one in the industry today comes close to the level of analysis and application understanding as Caterpillar.

Caterpillar designs the truck body as part of the larger Mining Truck System comprised of the Body, Loading Tool and Payload, Chassis, Terrain, Suspension, Wheels and Tires, and Power Train. By controlling the design and manufacture of the entire truck – Caterpillar is able to design bodies that fit the application and also fit the chassis to give optimum load distribution and steering and braking performance.

Our field population and balance of payload and durability are testimony to these methods.

Electronic Hoist Control. Provides the operator with better control of the load when dumping, including over-center load control and modulated control throughout the operating range. The automatic body-snubbing feature reduces impact on the frame, hoist cylinders and operator.

Fast Hoist Cycle Times. Two-stage hoist cylinders provide fast dump cycle times of 15.2 seconds for raise and 16.2 seconds for lower.

Body Liners. A variety of liner options are available to save weight and extend the body system's life. Wear surfaces and liners are equipped to handle tough impact loads while resisting abrasion. Wear plates deliver long life in high wear areas.

Custom Body Options. Tail extensions, sideboards, tumblebars, rock boxes and rock shedders are available to maintain rated payload, reduce spillage, and improve hauling efficiencies.

- Sideboards are designed to maximize or attain gross machine weight.
- Tail extensions are used to help retain the rear portion of the pile and limit load spillage on haul roads, extending tire life.

Target Payload Strategy. Achieving target payload is essential to meeting cost and tonnage/volume requirements at your operation. Caterpillar's exclusive 10/10/20 payload guidelines help achieve a balance of excellent payload with safe operation.

The Caterpillar 10/10/20 payload guidelines take into account the reality of running an operation by allowing overloads within limits but the guidelines also eliminate large overloads that can lead to unsafe operation of the truck.

Body Design. Cat truck bodies are designed for optimal strength, capacity and durability. Wear surfaces are equipped to handle even the toughest impact and abrasion over the long haul without diminishing capacity.

- Five-Sided Beams tie in the sidewall and floor junctions add increased body rigidity and strength.
- Wide Ribs in body floor provide increased durability and impact support.

- Full-Length Stringers create strength and rigidity throughout the bed.
- Box Section Beams offer increased durability in the floor, sidewall, top rail, corner, and cab canopy areas.

1) Dual-Slope Body. The dual-slope body design with V-shaped floor provides excellent load retention, maintains a low center of gravity, reduces shock loading, and maintains optimum load distribution on steep inclines and in challenging haul road conditions.

- Reinforced, rolled steel top rail increases body strength and protects the body from damage caused by the loading tool or falling material.
- 8 degree "V" reduces shock loading and centers the load.
- 7.5 degree forward body slope and 16 degree ducktail slope helps retain loads on steep grades.

2) Mine Specific Design (MSD II) Body. The Large Mining Truck Body Industry has focused on maximizing payload via lightweight body programs for the last eight years. During that time Caterpillar has been the leading supplier of lightweight bodies, supplying over 1500 lightweight bodies in addition to thousands of standard bodies (dual slope and flat floor bodies). Caterpillar optimizes a system, referred to as the Mine Specific Design (MSD) to create a customer/site specific body that is designed to maximize performance via an appropriate sized body with the most efficient impact and wear protection. Caterpillar has a variety of liner offerings that are key contributors to the MSD process (including Caterpillar patented products). The tailor made liner package is as essential to payload maximization as it to critical impact and wear protection requirements.

3) Gateless Coal Body. The Gateless Coal Body is an extension of the Caterpillar lightweight body design concept. These bodies are designed with large volumes to achieve target payloads in coal mining applications. The Caterpillar Gateless Coal body eliminates the heavy and maintenance intensive tailgate with a kicked up floor design that gives the volume required to meet target payload in coal haulage applications. The canopy on the Gateless Coal Body is designed to minimize the amount of material rolling onto the canopy during travel loaded. The 785 will have 4 sizes of Gateless Coal Bodies to cover the coal density range around the world. (Contact Caterpillar Truck Body Group for design and shipping availability).

Additional Caterpillar large mining truck body information:

- MSD II Sales Brochure (AEXQ0015).
- Truck Body Maintenance & Operator Guide (AEDK0627).
- Mining Truck Bodies Technical Sales Presentation CD (AEXC0613).

4) Caterpillar "X" Body. The Caterpillar X Body is a larger volume body than the dual slope or flat floor body. The added volume comes at no extra weight because of the design improvements to the Caterpillar X body. The design improvements include a more robust understructure of which, a new body pivot system and a new generation hoist bracket are included. The sidewall plate terminates on the floor plate and the sidewall and floor ribs are aligned to improve the structural integrity of the body. The sidewall ribs are tapered to provide more flexibility and durability. The Caterpillar X Body design is a combination of everything learned from the standard bodies (dual slope and flat floor) and the new technology of the lightweight body programs.

5) Flat Floor Body. The flat floor design with slight incline delivers excellent payload capacity, high dump clearances and smooth, controlled dumping.

- Flat floor design provides consistent wear characteristics on body tail.
- 12 degree forward body slope provides good load retention on better-maintained haul roads.
- 400 Brinell steel on surfaces provides excellent wear.

Serviceability

Less time spent on maintenance means more time on the haul roads.

Servicing Ease. Easy access to daily service points simplifies servicing and reduces time spent on regular maintenance procedures. Enhanced serviceability and 500-hour service intervals are designed to increase machine availability and productivity.

Maintenance Platform. Provides access to engine, air filters, steering hydraulic tank and battery compartment.

In-Frame Access. Permits easy access to major components for easy servicing and removal.

Ground-Level Access. Allows convenient servicing to tanks, filters, drains, and engine shutdown. Ground-level VIMS data port permits easier downloading of information.

Autolube. Automatic lubrication system reduces maintenance time by automatically lubricating necessary components on a regular basis.

Fast Fill Service Center. Optional Wiggins fast fill service center features high-speed fuel and oil exchange.

Oil Renewal System (ORS). Optional on-board engine oil management system is designed to increase availability and productivity by extending oil change intervals and reduce oil disposal labor and costs. ORS meters and injects used engine oil from the crankcase into the engine's fuel return line. New oil is manually added as a part of daily maintenance.

Scheduled Oil Sampling. S•O•S℠ sampling valves speed sampling and analysis reliability.

Pressure Test Points. Disconnect valves are conveniently located throughout the hydraulic systems for easy pressure testing.

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

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

Cylinder Heads. Individual cylinder heads are interchangeable for easy removal and visual inspection of internal parts.

On-Board Diagnostic Systems. The VIMS monitoring system continuously monitors all critical machine functions and components to help locate faults quickly for faster repair. Electronic Control Systems provide diagnosis of engine, transmission, brake and chassis systems. Service Technicians utilize the Electronic Technician service tool (Cat ET) to program and troubleshoot these systems.

Customer Support

Caterpillar dealers have what it takes to keep mining haul trucks productive.

Commitment Makes the Difference. Cat dealers offer a wide range of solutions, services and products that help you lower costs, enhance productivity and manage your operation more efficiently. Support goes far beyond parts and service. From the time you select a piece 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 necessary to handle your repair and maintenance needs, when and where you need them.

Product Support. Cat dealers believe superior products deserve superior support. When Cat products reach the field, they are supported by a worldwide network of parts distribution facilities, dealer service centers and technical training facilities to keep your equipment up and running. Cat customers rely on prompt, dependable parts availability and expertise through our global dealer network, ready to meet your needs 24/7.

Service Support. Every piece of 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 uptime and 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

Application Awareness. Operating and maintenance costs are influenced by many application and site-specific factors, such as: material density, loading position, payload, grades, speeds, haul road design, and maintenance. To optimize total cost of ownership and productivity, your Cat dealer can provide you with a fundamental understanding of the effects application characteristics and operating techniques have on maintenance and operating costs.

Operation. With today's complex products, equipment operators must have a thorough understanding of machine systems and operating techniques to maximize efficiency and profitability. Your Cat dealer can arrange training programs to help operator's improve productivity, decrease downtime, reduce operating costs, enhance safety, and improve return on the investment you make in Cat products.

Technology Products. Cat dealers offer a range of advanced technology products such as VIMS monitoring system and MineStar® information management system. These products include radio data communications, machine monitoring and diagnostics, fleet management, and haul road maintenance software – all designed to improve fleet efficiency, increase productivity, and lower costs.

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

Caterpillar mining machines and systems are designed with safety as their 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.

SAE and ISO Standards. The 789C is designed to many national and international standards.

Integral ROPS Cab. Resiliently mounted to the main frame to reduce vibration and sound, the integral ROPS structure is designed as an extension of the truck frame. The ROPS/FOPS structure provides “five-sided protection” for the operator.

Ladder/Secondary Egress. A wide, stationary ladder with a ladder with a stairway that allows easy access to and from the machine. The ladder on the right side of the machine permits secondary access or emergency egress.

Brake Systems. Four corner oil-cooled braking system provides excellent control. The service brakes and retarding system are actuated by modulated hydraulic pressure, while secondary and parking brake functions are spring applied and hydraulic released. This system assures braking in the event of complete hydraulic failure.

Steering System. A twin double-acting cylinder steering system is designed to deliver precise control under all loading and underfoot conditions. The steering hydraulic system is separate from the main hydraulic system to prevent cross-contamination and overheating from other sources.

Engine Shutoff Switch. A secondary engine shutoff switch is located at ground level.

Electrical System Disconnect. A battery disconnect switch, located directly above the front bumper, provides ground level lockout of the electrical system.

Overload Policy. Safety is integral to maintaining the highest productivity in mining machine operation. Caterpillar’s 10/10/20 Overload Policy assures that steering and braking systems have sufficient capacity to perform, even at 20 percent overload.

Standard Safety Features.

- Slip resistant surfaces
- Retractable, 75 mm (3 in) wide orange seat/shoulder belts with three-point operator restraint
- Wide-angle mirrors
- Body raised indicator
- Body retaining cable
- Guard rails
- Reverse neutralizer when dumping
- Low interior sound level

SAFETY.CAT.COM™.

Engine

Engine Model	Cat® 3512B-EUI	
Rated Power	1,750 rpm	
Gross Power – SAE J1995	1082 kW	1,450 hp
Net Power – SAE J1349	1005 kW	1,348 hp
Net Power	1005 kW	1,348 hp
Net Power – Cat	1005 kW	1,348 hp
Net Power – ISO 9249	1005 kW	1,348 hp
Net Power – 80/1269/EEC	1005 kW	1,348 hp
Torque Rise	23%	
Bore	170 mm	6.7 in
Stroke	190 mm	7.5 in
Displacement	51.8 L	3,158 in^3

- Net power advertised is the power available at rated speed of 1,750 rpm, measured at the flywheel when the engine is equipped with fan, air cleaner, muffler and alternator.
- Ratings based on standard air conditions of 25° C (77° F) and 99 kPa (29.32 Hg) dry 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).
- No engine derating required up to 3050 m (10,000 ft) altitude.
- Complaint with U.S. Environmental Protection Agency Tier 1 emissions standards.

Weights – Approximate

Gross Machine Operating Weight	249 480 kg	550,000 lb
Chassis Weight	74 450 kg	164,134 lb
Operating Weight – Empty – Flat Floor Body	102 150 kg	225,200 lb
Operating Weight – Empty – Dual Slope	95 725 kg	211,035 lb

Operating Specifications

Nominal Payload Capacity	136 tonnes	150 tons
SAE (2:1) Capacity	78 m^3	102 yd^3
Top Speed – Loaded	55 km/h	34 mph
Maximum Capacity	Custom	
Maximum Capacity Struck (SAE)	Custom	
Steer Angle	36°	
Turning Diameter – Front	27.5 m	90 ft 2 in
Raise Time	15.2 Seconds	
Lower Time	15.9 Seconds	
Machine Clearance Turning Diameter	30.6 m	100 ft 5 in

- Refer to the Caterpillar Mining Truck 10-10-20 payload policy for maximum gross machine weight limitations.

Transmission

Forward 1	12.1 km/h	7.5 mph
Forward 2	16.3 km/h	10.2 mph
Forward 3	22.2 km/h	13.8 mph
Forward 4	29.9 km/h	18.6 mph
Forward 5	40.6 km/h	25.2 mph
Forward 6	54.8 km/h	34 mph
Forward 7	0 km/h	0 mph
Reverse	11 km/h	6.8 mph

- Maximum travel speeds with standard 33.00-R51 tires.

Final Drives

Differential Ratio	2.10:1
Planetary Ratio	10.83:1
Total Reduction Ratio	22.75:1

- Planetary, full-floating.

Suspension

Effective Cylinder Stroke – Front	306.5 mm	12.1 in
Effective Cylinder Stroke – Rear	165 mm	6.5 in

Brakes

Brake Surface – Front	61 270 cm^2	9,497 in^2
Brake Surface – Rear	89 729 cm^2	13,908 in^2
Standards	SAE J1473 OCT90 ISO 3450-1985	

- Maximum operating weight up to 249 480 kg (550,000 lb).

Body Hoists

Pump Flow – High Idle	750 L/min	198 gal/min
Relief Valve Setting – Raise	17 238 kPa	2,500 psi
Body Raise Time – High Idle	15.2 Seconds	
Body Lower Time - High Idle	15.9 Seconds	
Body Lower Time – Float	16.2 Seconds	
Body Power Down – High Idle	15.9 Seconds	

- Twin, two-stage hydraulic cylinders mounted inside main frame; double-acting cylinders in second stage.
- Power raise in both stages; power down in second stage.

Approximate Weights – Dual Slope

Gross Weight – Empty	95 725 kg	211,035 lb
Chassis	74 450 kg	164,134 lb
Body	21 258 kg	46,865 lb
Front Axle – Empty	47%	
Rear Axle – Empty	53%	
Front Axle – Loaded	33%	
Rear Axle – Loaded	67%	

Approximate Weights – Flat Floor

Gross Weight – Empty	102 130 kg	225,200 lb
Chassis	74 450 kg	164,134 lb
Body	25 687 kg	56,630 lb
Standard Liner	1996 kg	4,400 lb
Front Axle – Empty	47%	
Rear Axle – Empty	53%	
Front Axle – Loaded	33%	
Rear Axle – Loaded	67%	

- Percentages represent weight distribution without liner.

Weight Distributions – Approximate

Front Axle – Empty	47%
Rear Axle – Empty	53%
Front Axle – Loaded	33%
Rear Axle – Loaded	67%

Capacity – Dual Slope – 100% fill factor

Struck	57 m^3	74 yd^3
Heaped (SAE 2:1)	78 m^3	102 yd^3

Capacity – Flat Floor – 100% fill factor

Struck	74 m^3	96 yd^3
Heaped (SAE 2:1)	91 m^3	119 yd^3

Service Refill Capacities

Fuel Tank	1893 L	500 gal
Cooling System	379 L	100 gal
Crankcase	204 L	54 gal
Differentials and Final Drives	436 L	115 gal
Steering Tank	90 L	24 gal
Steering System (Includes Tank)	117 L	31 gal
Brake/Hoist Hydraulic Tank	337 L	89 gal
Brake/Hoist System (Includes Tank)	641 L	169 gal
Torque Converter/Transmission System (Includes Sump)	248 L	65.51 gal

ROPS

ROPS Standards	SAE J1040 APR88 ISO 3471:1994

- ROPS (Rollover Protective Structure) for cab offered by Caterpillar meets SAE J1040 APR88 and ISO 3471:1994 Level II ROPS criteria.

Sound

Sound Standards	ANSI/SAE J1166 MAY90 SAE J88 APR95

- The operator sound exposure Leq (equivalent sound pressure level) measured according to work cycle procedures specified in ANSI/SAE J1166 MAY90 is 80 dB(A) for cab offered by Caterpillar, when properly installed and maintained and tested with doors and windows closed.
- The exterior sound pressure level for the standard machine measured at a distance of 15 m (49 ft) according to the test procedures specified in SAE J88 APR95, mid-gear moving operation is 89 dB(A).
- Hearing protection may be needed when operating with an open operator station and cab (when not properly maintained or doors/windows open) for extended periods or in a noisy environment.

Steering

Steering Standards	SAE J1511 OCT90 ISO 5010:1992

- Turning diameter on front wheel track with standard tires: 27.5 m (90 ft 2 in).
- Machine clearance turning diameter: 30.6 m (100 ft 5 in).
- Steering angle, left or right: 36 degrees.
- Separate hydraulic system prevents cross contamination.

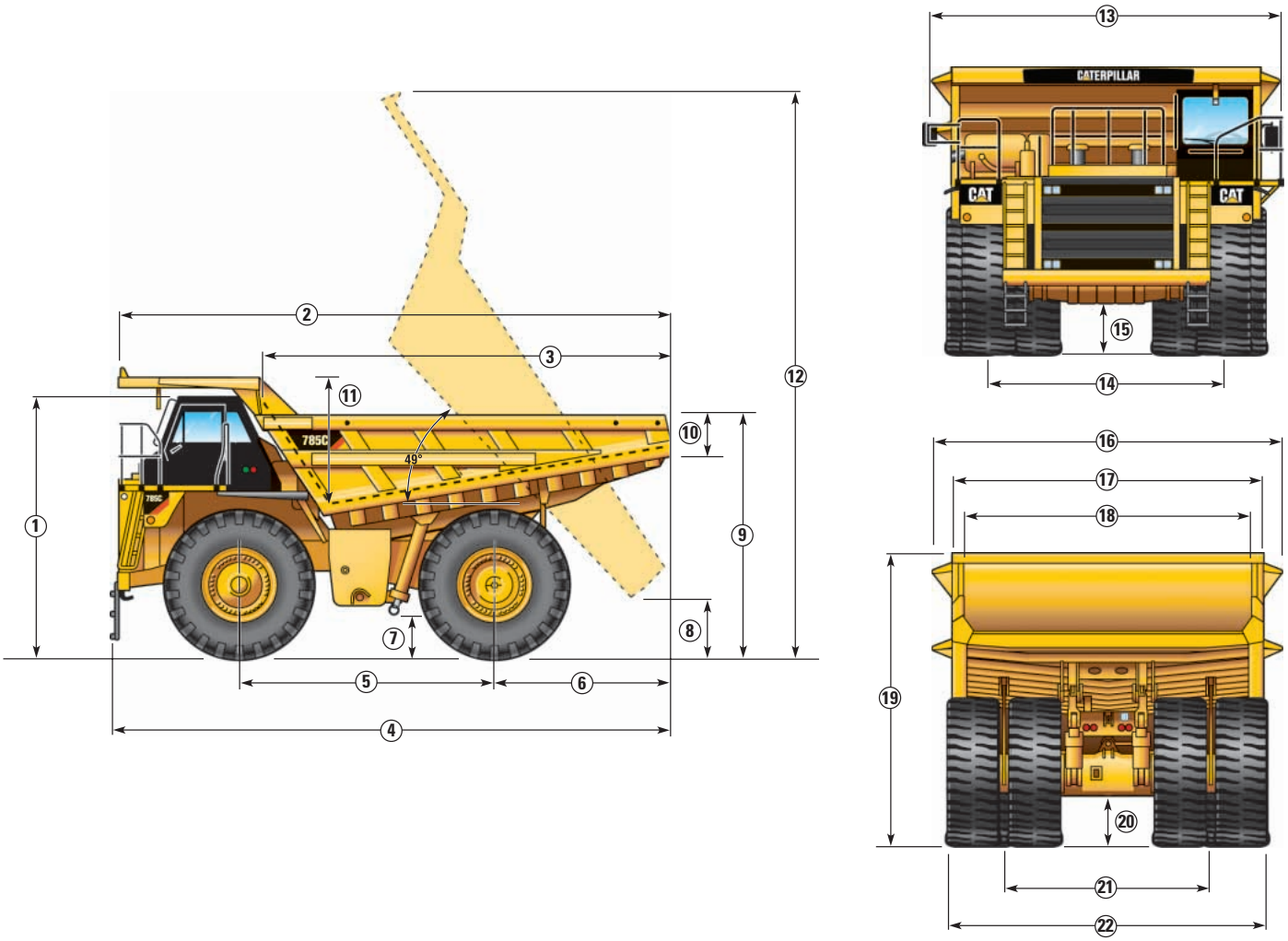
Tires

Standard Tire	33.00-R51 (E4) 33.00-R51 (E3)

- Productive capabilities of the 785C truck are such that, under certain job conditions, TKPH (TMPH) capabilities of standard or optional tires could be exceeded and, therefore, limit production.
- Caterpillar recommends the customer evaluate all job conditions and consult the tire manufacturer for proper tire selection.

Dimensions

All dimensions are approximate.



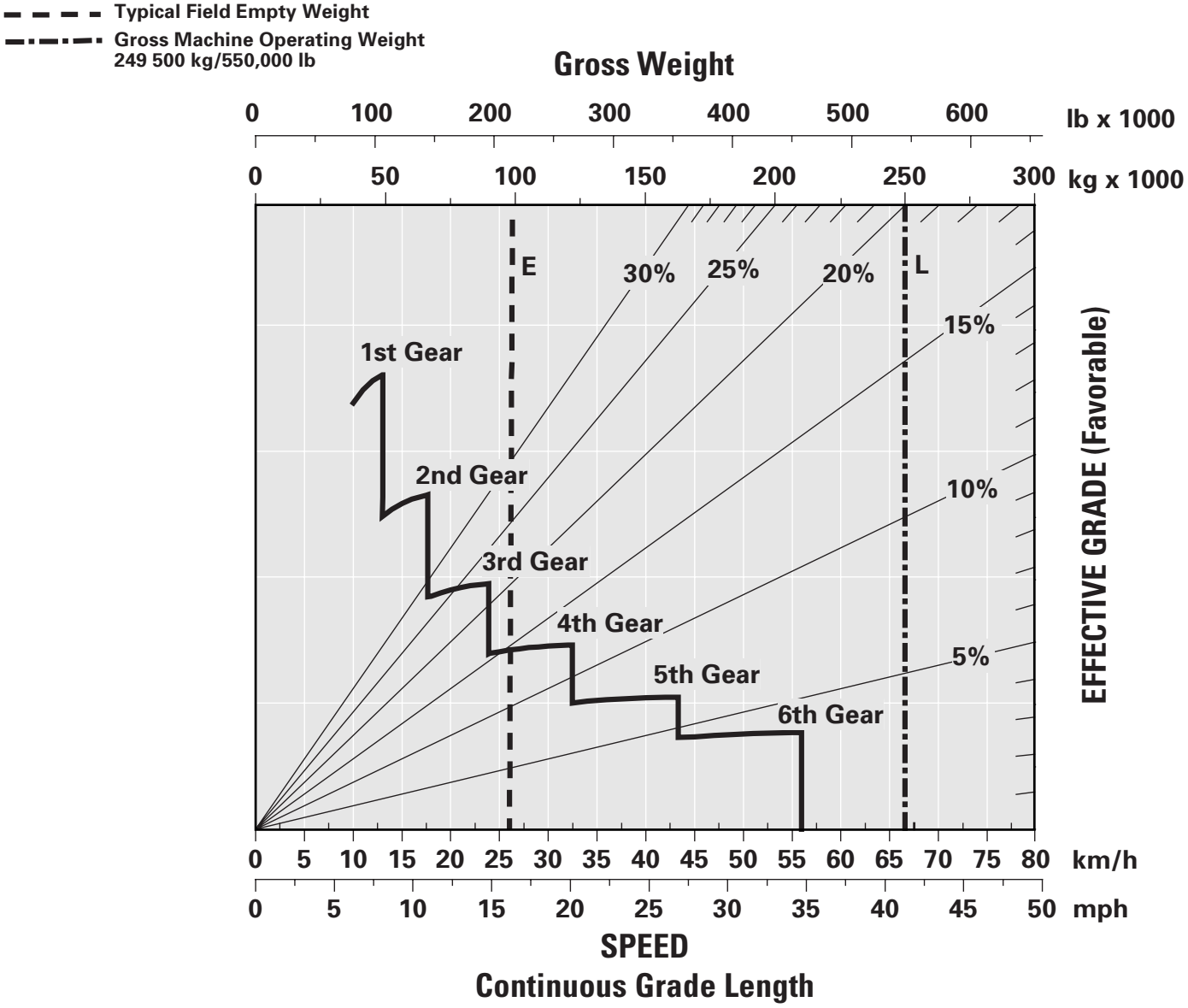
1	Height to Top of ROPS	5122 mm	16 ft 10 in
2	Overall Body Length	10 615 mm	34 ft 10 in
3	Inside Body Length	7652 mm	25 ft 2 in
4	Overall Length	11 024 mm	36 ft 3 in
5	Wheelbase	5182 mm	17 ft 0 in
6	Rear Axle to Tail	3410 mm	11 ft 3 in
7	Ground Clearance	987 mm	3 ft 3 in
8	Dump Clearance	1284 mm	4 ft 3 in
9	Loading Height – Empty	4968 mm	16 ft 4 in
10	Rear Sidewall Height	906 mm	3 ft 0 in
11	Inside Body Depth – Max	2132 mm	7 ft 0 in

12	Overall Height – Body Raised	11 207 mm	36 ft 10 in
13	Operating Width	6640 mm	21 ft 10 in
14	Centerline Front Tire Width	4850 mm	15 ft 11 in
15	Engine Guard Clearance	1057 mm	3 ft 6 in
16	Overall Canopy Width	6200 mm	20 ft 5 in
17	Outside Body Width	5890 mm	19 ft 4 in
18	Inside Body Width	5510 mm	18 ft 1 in
19	Front Canopy Height	5769 mm	19 ft 0 in
20	Rear Axle Clearance	1080 mm	3 ft 7 in
21	Centerline Rear Dual Tire Width	4285 mm	14 ft 1 in
22	Overall Tire Width	6274 mm	20 ft 8 in

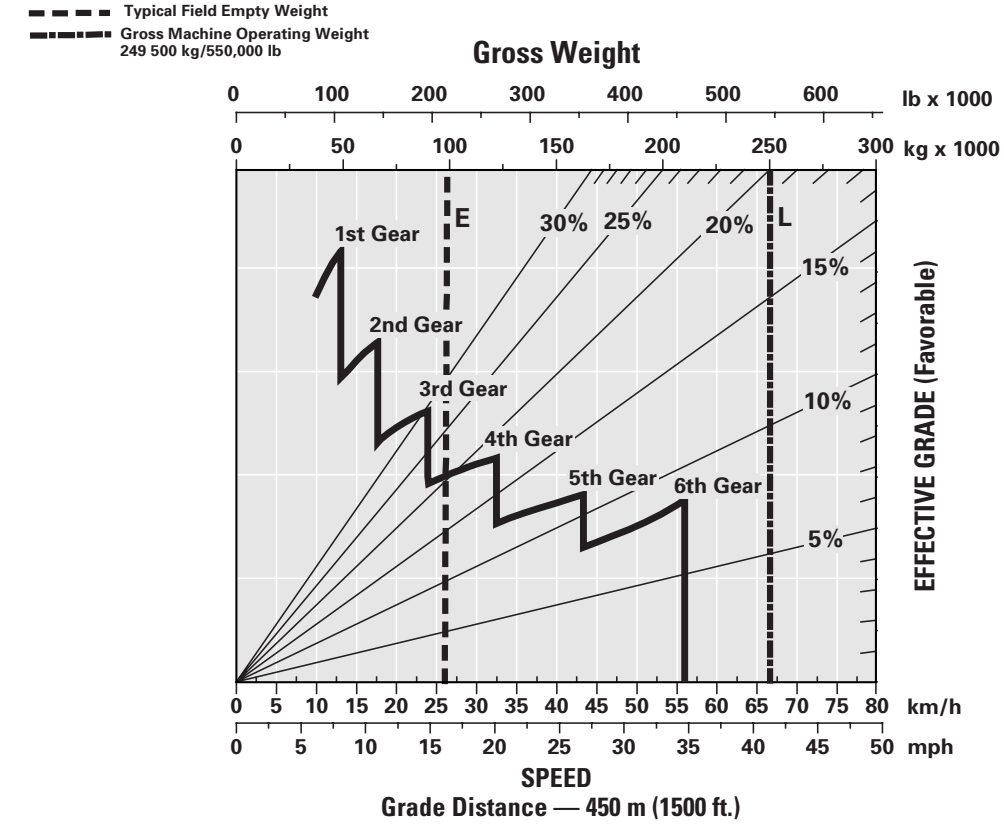
Retarding Performance

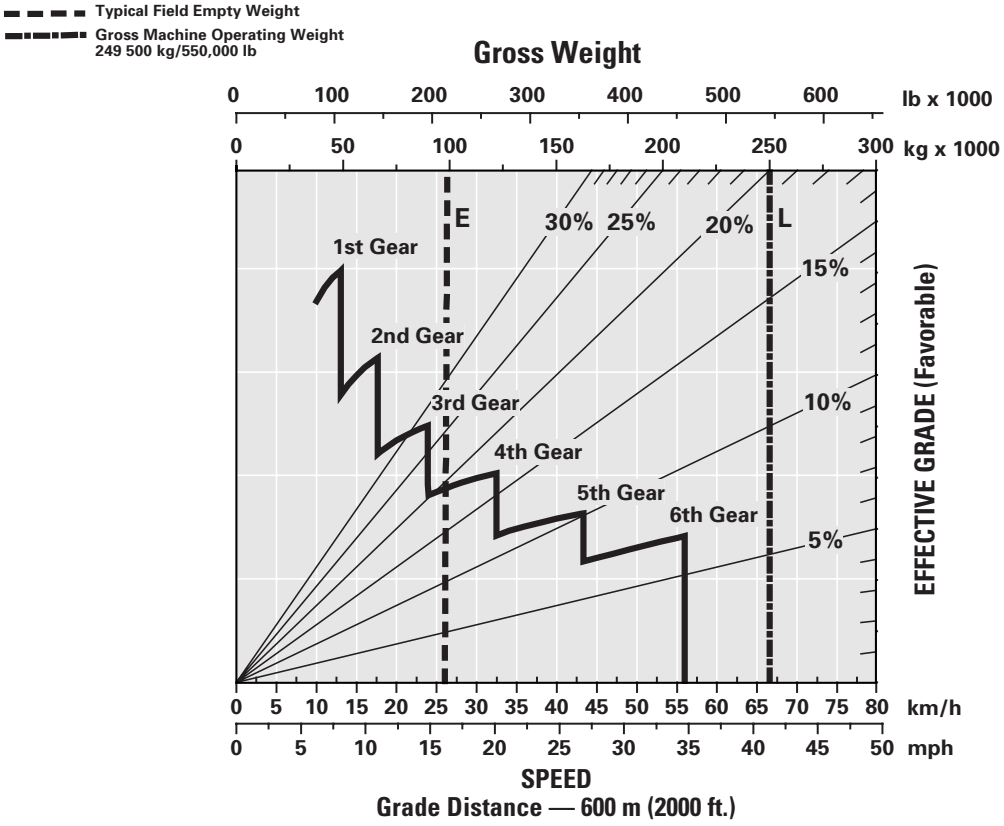
To determine retarding performance: Add lengths of all downhill segments and, using this total, refer to proper retarding chart. Read from gross weight down to the percent effective grade. Effective grade equals actual % grade minus 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-effective grade point, read horizontally to the curve with the highest obtainable gear, then down to maximum descent speed brakes can properly handle without exceeding cooling capacity. The following charts are based on these conditions: 32° C (90° F) ambient temperature, at sea level, with 33.00-R51 tires.

NOTE: Select the proper gear to maintain engine rpm at the highest possible level, without overspeeding the engine. If cooling oil overheats, reduce ground speed to allow transmission to shift to the next lower speed range.

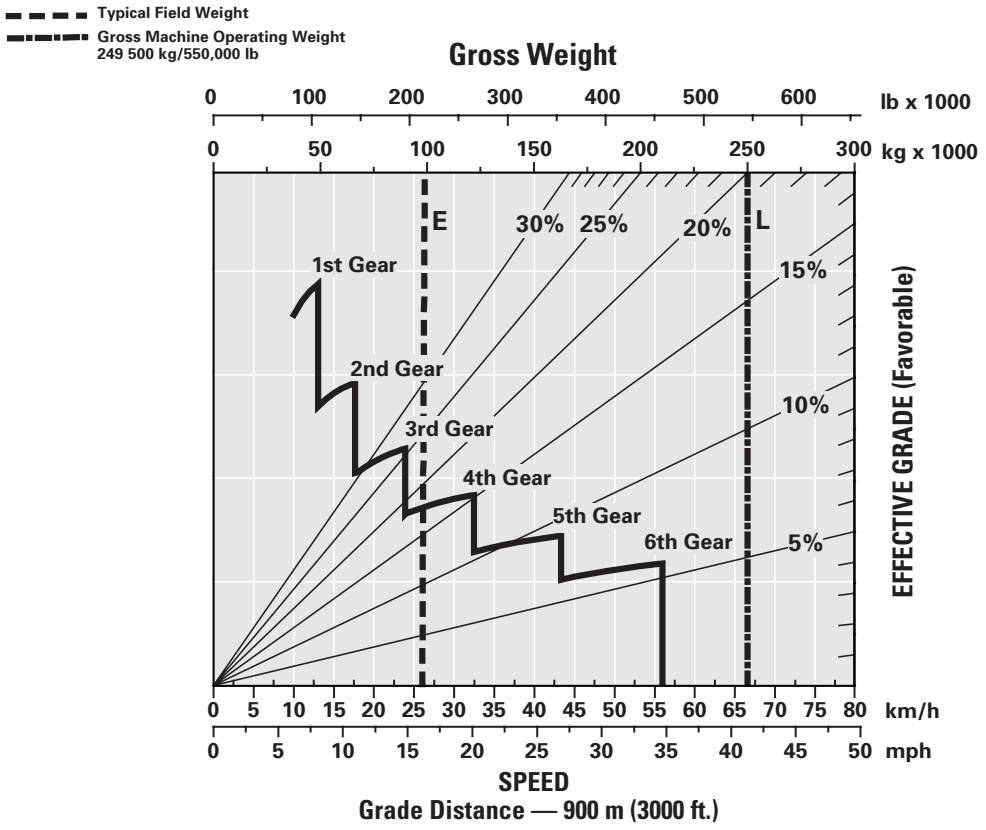


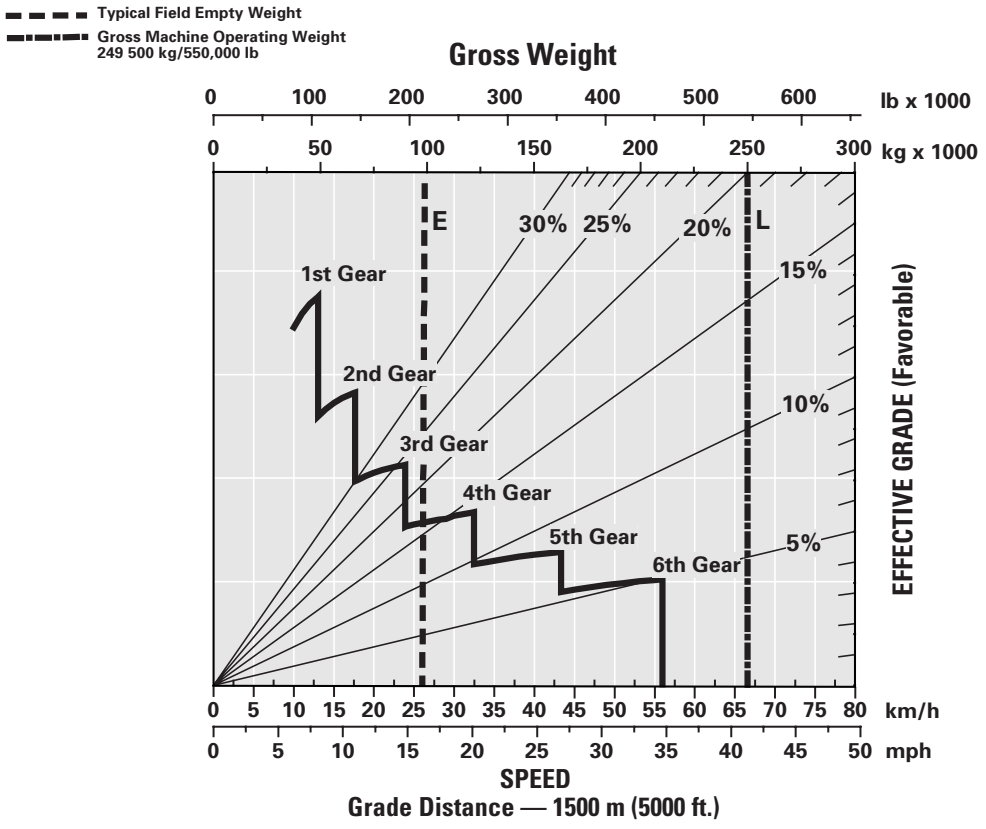
Retarding Performance





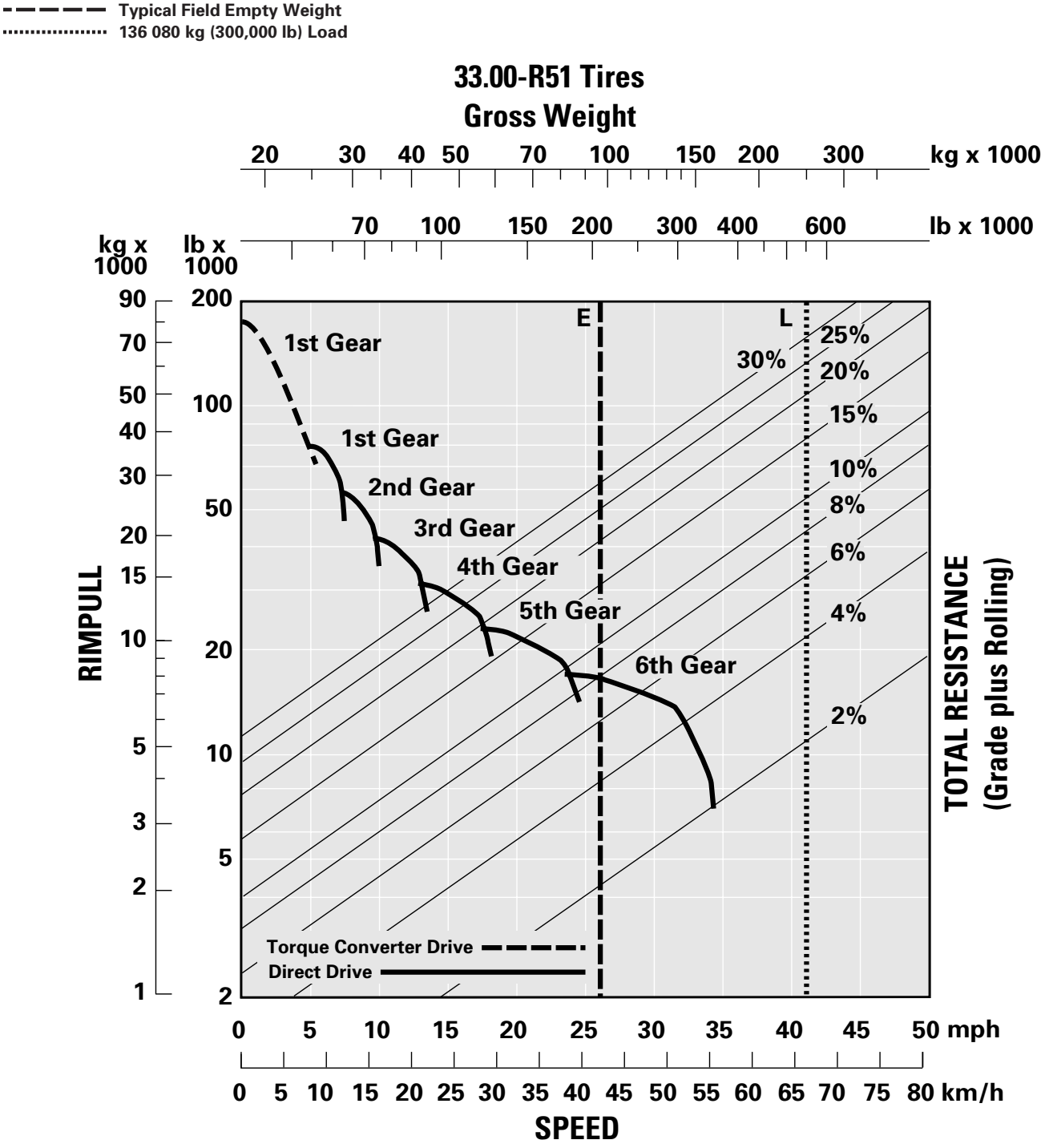
Retarding Performance





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 1% for each 10 kg/t (20 lb/ton) of rolling resistance. From this weight-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.



Standard Equipment

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

Air Cleaner with Precleaner (2)
Air Conditioner
Air Line Dryer (2)
Air Starter, Vane-type
Alarm, Back-up
Alternator (105-amp)
Automatic Retarder Control
Batteries, 93-amp-hour, Low-maintenance, 12-volt (2)
Body Mounting Group
Body Prop Cable
Brake Release Motor for Towing
Brake System
- Oil-cooled, Multiple-disc, Front and Rear
- Parking
- Secondary, Emergency

Cab, ROPS
- Ashtray
- Cigarette Lighter
- Coat Hook
- Diagnostic Connector
- Electric Window (Operator Only)
- Entertainment Radio Ready
- Glass, Tinted
- Heater/defroster: 11 070 kCal (43,930 Btu)
- Horn
- Insulated and Sound Suppressed
- Light, Dome/courtesy
- Mirrors, Right and Left
- Quad-Gauge Panel
  - Air Pressure
  - Brake Oil Temperature
  - Coolant Temperature
  - Fuel Level
- Seat, Air Suspension
- Seat, Passenger, Non-suspension
- Seat Belts, 75 mm (3") wide retractable
- Speedometer
- Steering, Automatic Supplemental
- Steering Wheel, Tilt, Padded, Telescopic
- Storage Compartment
- Sun Visor
- Tachometer
- Transmission Gear Indicator
- VIMS Dataports (2)
- VIMS Keypad
- VIMS Message Center with Universal Gauge
- Windshield Wiper and Washer

Crankcase Protection
Driveline Operator Safety Guard
Dumping, Auxiliary Quick Connect for “Buddy Dumping”
Electrical System, 24-volt to 12-volt
Engine – Caterpillar 3512B with Electronic Injection and Multi Point Oil Pressure Sensing
Fast-fill Fuel System, Wiggins
Ground Level
- Battery Disconnect
- Engine Shutdown
- VIMS Dataport

Lighting System
- Back-up Lights, Halogen
- Direction Signals and Hazard Warning (Rear Halogen)
- Headlights, Halogen, With Dimmer
- LH Ladder Light and Service Deck Lights
- Stop and Tail Lights (LED)
- Under-hood Light

Oil Change System, Quick Service
Reservoirs (Separate)
- Brake/converter/hoist
- Steering
- Transmission

Rims, Center Mounted for 33.00-R51 Tires
Rock Ejectors
Starting Aid, Ether, Automatic
Steering, Auxiliary Quick Connect for Towing
Tie Down Eyes
Tow Hooks, Front
Tow Pin, Rear
Traction Control System
Transmission, Six-speed, Automatic Power Shift, Electronic Control and Downshift Inhibitor, Reverse Neutralizer during Dumping, and Neutral Start Switch, Reverse Shift Inhibitor, Controlled Throttle Shifting, Directional Shift Management, Neutral Coast Inhibitor, Body-up Shift Inhibitor
Vandalism Protection Locks
Vital Information Management System with True Weight Production Manager

Optional Equipment

With approximate changes in operating weights.
Optional equipment may vary. Consult your Caterpillar Dealer for specifics.

	kg	lb
Bodies	see chart below	
Body extensions:		
Tail	665	1465
Sideboards[1]	798	1760
Body heat (exhaust)	36	80
Body and tail extension liners[2]		
Full-length liner	7633	16,828
Tail extension liner[3]	338	745
Grid liner[4]	1145	2525
Fuel tank 2500 L (660 gal.)	209	460
Heater, fuel recirculation type, non-electric	2	5
Heater, engine coolant and oil 120-volt external power source	2	5
Heater, engine coolant and oil 240-volt external power source	10	22
Oil Renewal System	11	25
Prelube system	24	53
Rim, spare for 33.00-R51 tire	889	1960
Shutter group, inside mounted	265	585
Starting system		
Air (TDI Turbine)	–5	–10
Air (IR Turbine)	–17	–37
Variable pitch fan, Flexxaire	273	600
Variable speed fan, Rockford	182	400

[1] Increases capacity to 91 m^3/119 yd^3
[2] Minimum yield strength 900 mPa/9000 Bar/130,500 psi; 400 Brinell steel
[3] Use with full liners when tail extension used
[4] Covers rear third of body only

Weight/Payload Calculation*

(Example)

	Flat Floor		Dual Slope	
	kg	lb	kg	lb
Empty Chassis Weight	55 421	122,180	55 421	122,180
Fuel Tank and Fuel 1892 L (500 gal.)	2232	4920	2232	4920
Tires (33.00-R51)	10 492	23,130	10 492	23,130
Rims 610 mm (24 in.)	6323	13,940	6323	13,940
Chassis Weight	74 468	164,170	74 468	164,170
Debris Allowance (4% of chassis)	2979	6567	2979	6567
Body Weight	25 687	56,630	21 258	46,865
Body Attachments Weight	1996	4400	0	0
Additional Attachments Weight	+	+	+	+
Total Empty Operating Weight	105 129	231,767	98 704	217,602
Target Payload	**144 351**	**318,233**	**150 776**	**332,398**
Gross Machine Operating Weight	249 480	550,000	249 480	550,000

*Note: Refer to Caterpillar's 10/10/20 Payload Policy for calculating maximum gross machine weight allowable.

785C Mining Truck

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

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

AEHQ5320-03 (12-07)

Replaces AEHQ5320-02

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