Electric Rope Shovels
Product Line
Harnessing Ingenuity

At Caterpillar, we’re always thinking of new ways to meet our customers’ needs. It’s how we constantly improve on the electric rope shovel and provide the extreme levels of productivity and cost-effectiveness that our global customers demand.

Electric Rope Shovels

Cat® shovels are primarily used in loading haul trucks with overburden and ore during the mining process. Caterpillar continues to improve the design and technology of mining shovels to provide customers with maximum productivity and cost-effectiveness. Through pioneering efforts with the latest technology, Cat produces a shovel with superior digging forces and rapid cycle times. Global mining customers rely on Caterpillar for innovative, dependable electric rope shovels and the commitment to support them.

Machine Service & Support

Caterpillar factory-trained service engineers are available throughout the world to provide our customers with the support necessary to meet their production requirements. Our service engineers have the knowledge and experience to bring a successful result to the most demanding projects. In addition, they are backed by the Caterpillar team of engineers, who have design-based knowledge not available from other sources.
AC IGBT Electrics

With over 30 years of AC experience and over 200 operating AC machines, Bucyrus led the industry in AC electric rope shovels. Caterpillar will carry on this proud tradition. Since its launch in 1981, the AC electric rope shovel has gained strong industry acceptance due to its clear benefits over DC machines, including:

• Higher productivity: AC machines are faster than DC machines due to an absence of commutation limits, which enables AC machines to operate with a greater area under the speed torque curve. This translates to faster lowering speeds and reduced swing times

• Superior availability: AC IGBT electric rope shovels have routinely demonstrated electrical availabilities of greater than 98%. Compared to DC machines, mean time between failures is extended and mean time to repair is reduced

• Greater reliability: AC machines are less vulnerable to input voltage variation. They continue to operate with instantaneous voltages from -20% to -30%, ranges which cause DC shovels to shut down

• More efficient: AC drives provide 10% energy savings over DC over the life of the shovel. AC drives maintain a power factor of 1.0 (zero efficiency loss), compared to 0.95 with DC drives

• Reduced maintenance: No regular maintenance is required on IGBT power control modules. Motor maintenance on AC machines is reduced to greasing and replacing bearings every 30,000 hours

• Reduced inventory: AC machines do not require a RPC, motor brushes or motor commutors. IGBT modules are interchangeable between AFEs, inverters, motions and machines
AccessDirect™

AccessDirect is an electrical interface system that facilitates remote access to a machine’s onboard computer via the Internet. With AccessDirect, maintenance personnel can analyze faults from off-site locations and arrive on-site prepared to resolve the issue – leading to reduced machine downtime. AccessDirect also enables factory experts to remote-access and troubleshoot faults, resulting in superior response times and reduced mean time to repair.

MIDAS™

Celebrating its tenth anniversary on the market, the MIDAS health monitoring system continues to optimize machine performance by providing, logging and analyzing data on a variety of machine variables. MIDAS comes complete with a built-in report generator that outputs data in a format that can be easily analyzed to identify opportunities to improve machine performance. When paired with AccessDirect, MIDAS provides real-time monitoring of shovel operations and provides users with a 3D model to watch the shovel in motion.

AccuLoad™

AccuLoad is a data analysis system that provides real-time feedback on dipper loads with industry leading accuracy of ±4% on greater than 90% of all loads. AccuLoad’s load calculation is accomplished without mechanical sensors, eliminating the need for recalibration, a common problem with other load-weighing systems. The system can be employed to calculate material moved, to monitor overloading of trucks or to allow operators to study their load and shift performance. It can also log operator performance data which, when paired with MIDAS, can generate reports to help identify training opportunities to increase shift production.
**Major Structures**

Cat major structures are designed for extended performance in harsh mining conditions. Structures are manufactured using cold-weather, impact-resistant, high-strength steel with select welds of full-penetration, profiled and ground type. All welds undergo visual inspection, with critical welds also receiving MT, UT or X-ray inspection. Large furnaces are used to stress-relieve entire weldments for reduced susceptibility to cracking. Interiors of finished structures are painted white to facilitate field inspection.

**Robust Front End Design**

The Cat free-floating tubular handle design presents many benefits over traditional rack-and-pinion systems, including:

- Faster swing times: the Cat deck-mounted, rather than boom-mounted, crowd machinery greatly reduces front end weight for reduced swing inertia and faster swing times
- Elimination of torsional loading: The free-floating handle design allows the Cat handle to rotate under torsional stress, transferring stress into the ropes rather than into the boom and handle
- Crowd cushioning: With all electric rope shovels, as the dipper crowds the bank the handle recoils slightly. On Cat shovels, this force is absorbed in the ropes (rope crowd) or hydraulic fluid (HydraCrowd™), reducing stress on the handle. On a rack-and-pinion system, the force is absorbed where the rack and pinions mesh, leading to broken teeth and increased handle cracking
- Improved line of sight: Cat machines provide operators with a much-improved left-hand line of sight by moving the crowd machinery from the boom to the deck
- Efficient digging: Wide-set boom point sheaves stabilize the dipper as it engages the bank for easier and more efficient digging
**Cat® Cab**

Caterpillar’s new state-of-the-art operator’s cab is the product of a multi-year collaboration between Caterpillar, mining companies and shovel operators. It has secured one patent and has an additional five patents pending. The cab provides industry-leading visibility with excellent line of sight supplemented by five optimally-mounted cameras and display screens. It provides enhanced safety through dual access/egress doors and an optimally-placed trainer seat with independent emergency stop. Additionally, the new cab offers the smoothest, most comfortable ride available with an ergonomic, adjustable operator’s seat with fully pneumatic suspension system, low-effort joysticks and dual display screens optimized for operator comfort.

**HydraCrowd™**

HydraCrowd represents the first new crowd technology developed in the past 70 years. A hydraulic cylinder inside the tubular dipper handle maintains all the benefits of the Cat front end while eliminating the need for routine crowd/retract rope replacements. With a two-year major maintenance interval, HydraCrowd improves safety and cuts downtime by reducing the number of maintenance events needed to keep the machine operational. HydraCrowd is controlled with proven Cat IGBT technology and has complete diagnostic and troubleshooting information with step-by-step instructions. It is designed to operate in all climates to ensure each shovel will be able to deliver maximum productivity in the harshest conditions.
**LatchFree™ Dipper System**

The LatchFree Dipper System is Caterpillar’s solution to customers’ number-one cause of downtime – the latch assembly. The LatchFree dipper eliminates the latch assembly, replacing it with a strong steel link mounted to the dipper back – away from material flow. The system improves safety by reducing the number of maintenance events required to maintain the system and increases reliability by reducing unplanned downtime. The LatchFree dipper system comes complete with a comprehensive training program to ensure customers achieve maximum system benefits.

**FastFil™ Dipper Design**

The unique FastFil dipper provides customers with faster and fuller dipper loads. Its trapezoidal shape accommodates the natural configuration of the load, eliminating voids that occur with box-shaped dippers for improved fill factors. The trapezoidal shape also reduces dipper size and weight for improved maneuverability and faster swing times. Additionally, optimized lip and rake angles lead to improved bank penetration and eliminate bulldozing for reduced material turbulence. Finally, a shorter dipper body cuts load and dump time. Combined, FastFil features optimize fill factor and maximize productivity.

**Safety**

Safety plays an integral role in everything we do at Caterpillar, from our factory floors to our service centers to our clients’ mine sites. Caterpillar’s commitment to safety is apparent in our product designs, which undergo risk assessments and are designed to meet strict codes and regulations. Examples of our safety focus include the development of a new cab with dual egress doors and flat floors to provide stretcher-to-operator access, LatchFree dipper and HydraCrowd for reduced unplanned maintenance, and extensive training programs that keep your operators and maintenance personnel out of harm’s way.
Training

The relationship between a highly productive mine and well-trained personnel is clear: the ability of your mining equipment to achieve promised production levels is as dependent on the operator’s knowledge and skill as it is on the equipment itself. To help your employees maximize your investment in Cat equipment, we provide on-site operator training and assessments, on-site electrical and mechanical maintenance training, and a variety of computer-based training options.

Computer Based Training (CBT) Modules

Caterpillar CBT modules provide convenient 24/7 access to training on a variety of topics ranging from safety and operation to mechanical and electrical repairs. Highly visual and interactive, CBTs are short online courses on technical subjects designed by training specialists. These courses provide a cost-effective way to train employees, improve safety and increase machine performance.

- Payload: 109 tonne (120 ton) capacity
- Dipper capacity: 30.6-62.6 m³ (40-82 yd³)
- 3-pass load – Cat 795F and Unit Rig MT5500 mining trucks
- 4-pass load – Cat 797F and Unit Rig MT6300 mining trucks
- Operating weight: 1 382 400 kg (3,047,670 lbs)
- Electrics: AC IGBT
- Propel: dual-motor independent planetary drive
- Swing: dual-motor with dual-output planetary drive
- Hoist: single-motor dual-output planetary drive
- Crowd: HydraCrowd or rope crowd
- Major structures: stress-relieved with white-painted interiors
- Crawlers: 2 000 mm (79 in) links for a GBP of 374 kpa (54.2 psi). Alternate links available to meet customer needs.
- Lube system: automatic central lube system
- Cab: Cat new cab (see features, page 5)
7495 HF

- Payload: 109 tonne (120 ton) capacity
- Dipper capacity: 30.6-62.6 m³ (40-82 yd³)
- 3-pass load – Cat 795F and Unit Rig MT5500 mining trucks
- 4-pass load – Cat 797F and Unit Rig MT6300 mining trucks
- Operating weight: 1 442 274 kg (3,179,670 lbs)
- Electrics: AC IGBT
- Propel: dual-motor independent planetary drive
- Swing: dual-motor with dual-output planetary drive
- Hoist: single-motor dual-output planetary drive
- Crowd: HydraCrowd or rope crowd
- Major structures: stress-relieved with white-painted interiors
- Crawlers: 3 160 mm (125 in) links for a GBP of 247 kpa (35.8 psi). Alternate links available to meet customer needs.
- Lube system: automatic central lube system
- Cab: Cat new cab (see features, page 4)

7495 HD

- Payload: 81 tonne (90 ton) capacity
- Dipper capacity: 19.1-49.7 m³ (25-65 yd³)
- 3-pass load – Cat 793D and Unit Rig MT4400 mining trucks
- 4-pass load – Cat 795F and Unit Rig MT5500 mining trucks
- Operating weight: 1 306 346 kg (2,880,000 lbs)
- Electrics: AC IGBT
- Propel: dual-motor independent planetary drive
- Swing: dual-motor with dual-output planetary drive
- Hoist: single-motor dual-output planetary drive
- Crowd: Rope crowd
- Major structures: stress-relieved with white-painted interiors
- Crawlers: 2 130 mm (84 in) links for a GBP of 401 kpa (58.1 psi). Alternate links available to meet customer needs.
- Lube system: automatic central lube system
- Cab: Ergonomic, adjustable operator seat provides excellent line of sight. Touchscreen display and joysticks optimize operator comfort.
• Payload: 63.5 tonne (70 ton) capacity
• Dipper capacity: 19.1-49.7 m³ (25-65 yd³)
• 3-pass load – Cat 789C and Unit Rig MT3700 mining trucks
• 4-pass load – Cat 793D and Unit Rig MT4400 mining trucks
• Operating weight: 1 179 340 kg (2,600,000 lbs)
• Electrics: AC IGBT
• Propel: dual-motor independent planetary drive
• Swing: dual-motor with dual-output planetary drive
• Hoist: single-motor dual-output planetary drive
• Crowd: Rope crowd
• Major structures: stress-relieved with white-painted interiors
• Crawlers: 2 130 mm (84 in) links for a GBP of 362 kpa (52.2 psi). Alternate links available to meet customer needs.
• Lube system: automatic central lube system
• Cab: Ergonomic, adjustable operator seat provides excellent line of sight. Touchscreen display and joysticks optimize operator comfort.

• Payload: 45.4 tonne (50 ton) capacity
• Dipper capacity: 18.4-39 m³ (24-51 yd³)
• 3-pass load – Cat 785D and Unit Rig MT3300 mining trucks
• 4-pass load – Cat 789C and Unit Rig MT3700 mining trucks
• Operating weight: 789 251 kg (1,740,000 lbs)
• Electrics: AC IGBT
• Propel: dual-motor independent planetary drive
• Swing: dual-motor with single-output drive
• Hoist: single-motor conventional drive
• Crowd: Rope crowd
• Major structures: stress-relieved with white-painted interiors
• Crawlers: 1 400 mm (55 in) links for a GBP of 376.6 kpa (53.9 psi). Alternate links available to meet customer needs.
• Lube system: automatic central lube system
• Cab: Ergonomic, adjustable operator seat provides excellent line of sight. Touchscreen display and joysticks optimize operator comfort.
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<th>MODEL</th>
<th>Payload</th>
<th>785D MT3300</th>
<th>789C MT3700</th>
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**7495 (HR/HF)**
- 3-pass load – Cat 795F and Unit Rig MT5500
- 4-pass load – Cat 797F and Unit Rig MT6300

**7495 (HD)**
- 3-pass load – Cat 793D and Unit Rig MT4400
- 4-pass load – Cat 795F and Unit Rig MT5500

**7395**
- 3-pass load – Cat 789C and Unit Rig MT3700
- 4-pass load – Cat 793D and Unit Rig MT4400

**7295 (HR)**
- 3-pass load – Cat 785D and Unit Rig MT3300
- 4-pass load – Cat 789C and Unit Rig MT3700
Electric Rope Shovels – Product Line