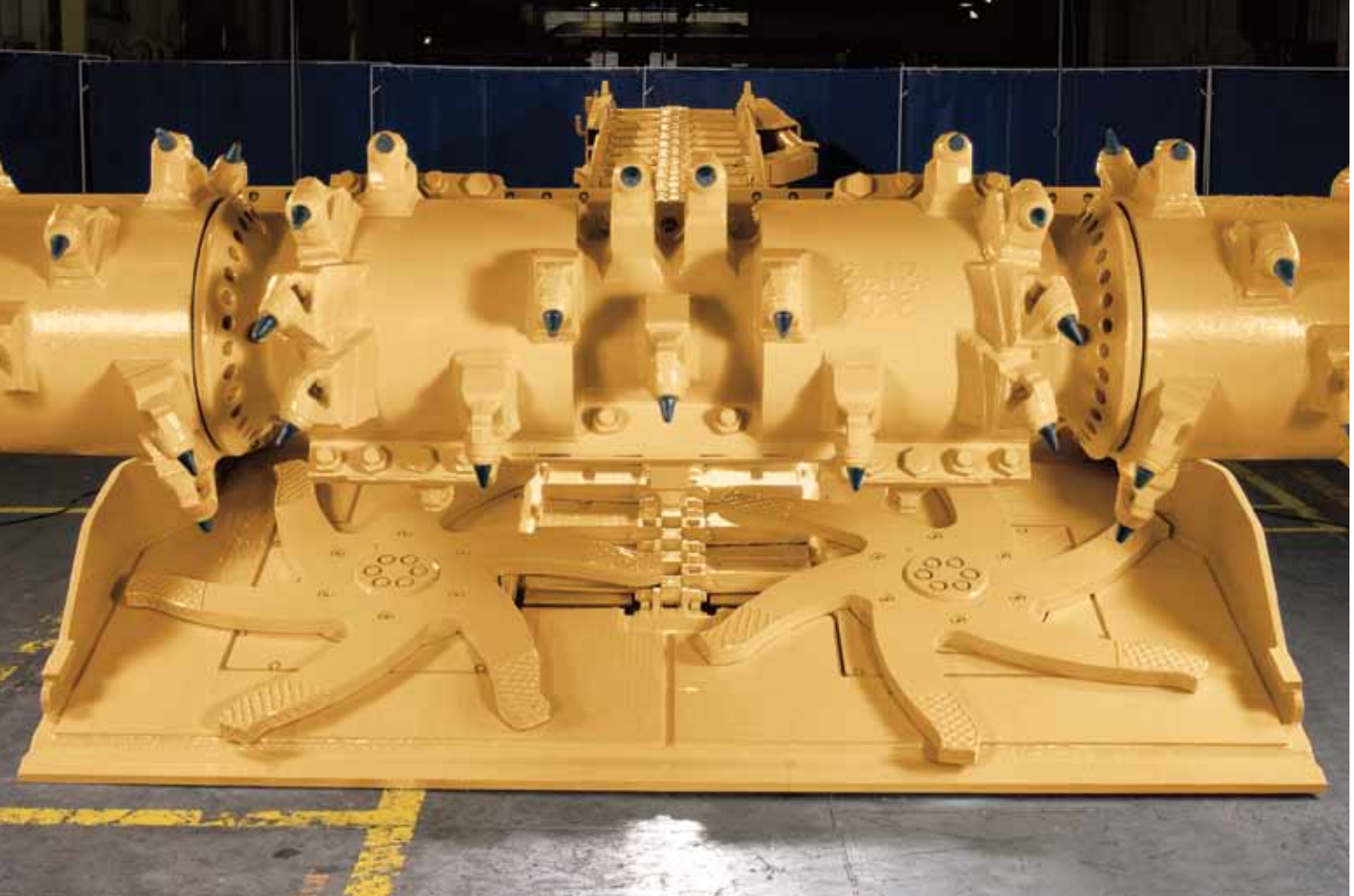


# Continuous Miners

CM235







## Compact Power

Weighing in at 61 tonnes (135,000 lbs) and with a compact design specifically for low- to mid-seam operations, the Cat® CM235 and CM235T continuous miners incorporate all the robust features of the previous series plus new features and enhancements. With 2 x 205 kW (2 x 275 hp) cutter-head motors, they are the most powerful continuous miners in their class.

- Operate with an expanded range of 863 mm to 3 251 mm (34 in to 128 in)
- 61 tonnes (135,000 lbs) class machine has highest cutter head power of any continuous miner in its class
- Compact geometry which ensures efficient turning, crosscuts and maneuverability
- Incorporates all the robust features of the CM200 series (plus more new features/enhancements)
- VFD Traction System for maximum efficiency, productivity and extended service life

### CM235

- Motors parallel to the cutter heads
- Can operate in a lower profile while maintaining a good loading rate and throat clearance
- Reverse angle core breaker

### CM235 T

- Motors are perpendicular to the cutter heads
- Reverse angle core breaker

## Heavy Duty Mainframe

To ensure maximum rigidity and stability, the high-strength one-piece mainframe is constructed from steel plate ranging in thickness from 1.9 to 7.6 mm (0.75 to 3 in). The main support rails are 50.8 mm (2 in) thick, and the large 114.3 mm (4.5 in) diameter pivots have replaceable 12.7 mm (0.5 in) wall bushings. The mainframe has been shortened by 762 mm (2 ft 6 in) to improve maneuverability. The mainframe allows crossover bidirectional scrubber discharge (integral to main frame).

## Traction

Like all Cat continuous miners, the 235 and 235T feature independent tramming for greater maneuverability and wide crawlers for maximum penetration and low ground pressure. The 82 kW (110 hp) traction motor offers the highest power in its class. The traction system is controlled by Variable Frequency Drives (VFDs), which give smooth zero-to-full speed transition. The drives can develop 100% torque at zero RPM.

Pin-on replaceable wear plates on the traction gearcase assemblies and the crawler frames make for quick and easy maintenance.



## Cutter head

Massive 152 mm (6 in) boom legs on the cutter support the frame and ensure minimal deflection and fatigue. The cutter drums are 50.8 mm (2 in) thick, allowing maximum bit-tip standoff. The cutter gearcase is split: Each side is independent and only connected by the center cutting drum. This allows one gearcase – with half the number of components – to be replaced, as opposed to standard designs which require replacement of the entire assembly. The cutting head is powered by two 2 x 205 kW (275 hp) motors. Each is attached to a gearcase via a torque-limiting clutch with a response time of 0.1 seconds. The gearcase has three independent oil compartments, allowing convenient viewing of oil levels through site gauges.



## Conveyor

The CM235 and 235T have a new conveyor boom design with inboard conveyor lift cylinders and a conveyor width of 965 mm (38 in) for faster loading. The conveyor is driven by a double-sprocket drive with universal swivel-joint operation. The conveyor chain transitions around an 8-tooth sprocket on the foot shaft, which ensures smooth and quiet operations. The 31.75 mm (1.25 in) diameter chain provides greater strength. The interface between the cutter boom, gather pan and conveyor provide maximum throat clearance, ensuring optimum load rates.



## Control Systems

The latest evolution of integrated machine electrical controls and hydraulics systems provides precise machine control and increased component life. Machine configuration can be set up to match variable mining conditions. A comprehensive machine management/diagnostics system is used to manage the continuous miner's health and aid in the quick diagnosis and repair of problem. A graphics display provides the users with the condition of all motors, all VFD components, and the condition and position of all hydraulic control valves and solenoids.

## Hydraulics

The CM235 and 235T are equipped with one of the latest innovations in remote control hydraulics systems. This technology provides a previously unattainable level of control. Caterpillar also incorporates the Controller Area Network (CAN) system into its continuous miners. CAN allows onboard microcontrollers and devices to communicate with each other without a host computer. The continuous miners also feature state-of-the-art troubleshooting support that displays faults and their locations on the display unit. The hydraulic system – which has fewer components and less hosing – is more efficient because it generates less heat within the system.

It is powered by a 29.8 kW (40 hp) three-phase motor coupled to a two-stage pump with a 132 L (35 gal) stage and 26 L (7 gal) stage. A load-sensing circuit – with valves located inside the main valve bank – allows the hydraulic pump to remain unloaded until valve actuation changes operating pressure within milliseconds. An additional load valve compensates switching operation (shifting valve).



## VFD Technology

Variable Frequency Drive (VFD) technology allows faster place change, turning breaks and improved sump and cutting performance. VFDs also provide machine protection without compromising productivity by increasing safeguards against overloading the cutter head or tram system. This has the additional benefit of extending tram motor life and decreasing the need for tram motor maintenance.





## Health & Safety Enhancements

Several features of the CM235 and 235T enhance health and safety. A quieter dual-sprocket conveyor chain results in lower ambient noise. The control system is proximity detection ready. Hydraulic temperatures and spool position monitoring (over CAN bus) herald a new level of safety in which the machine can determine points of failure and recognize valve malfunction. Coupled with an intuitive human machine interface, the operator and maintenance supervisor have an unprecedented level of understanding of their machine.



## Wethead Compatibility

Cat® wethead technology delivers water right at the cutting edge, resulting in better dust control, noise reduction, operator comfort and visibility, as well as a substantial improvement in bit life.

## Control Systems

Cat Control Systems allow operators to drive the continuous miner remotely from a safe distance using a radio console, improving operator safety.



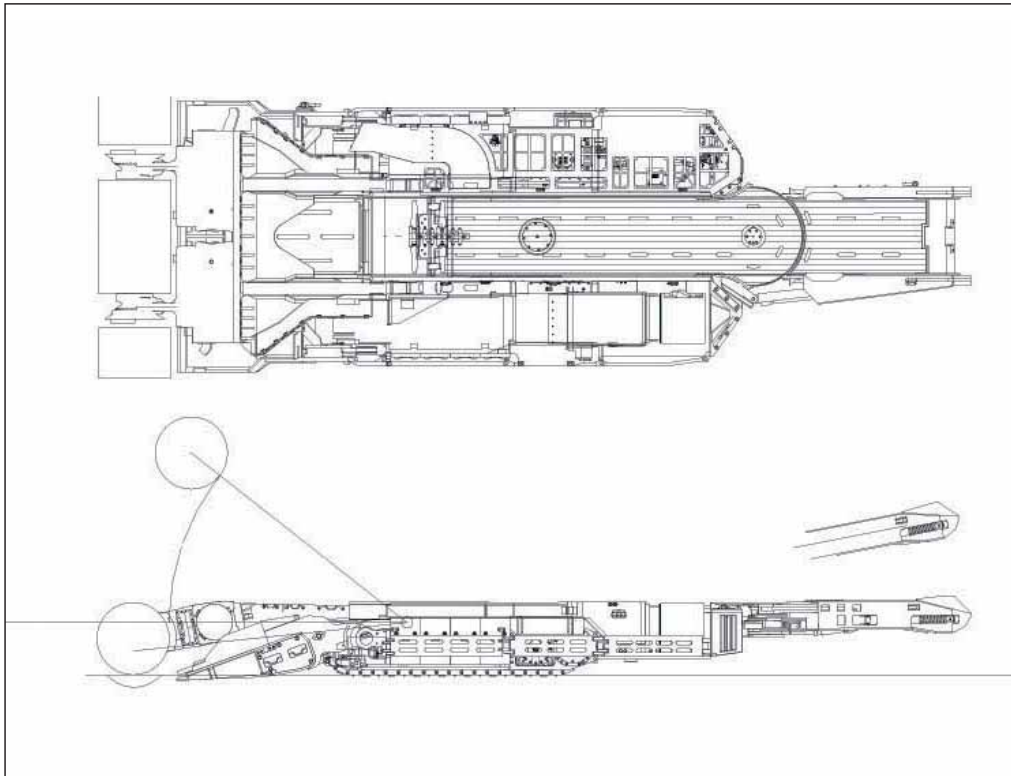
## Cat CM235/235T Continuous Miners

### Key Features/ Specifications

- Broad operating range with maximum rated cutting head power
- 2 x 205 kW (275 hp) cutting motors with torque limiting clutch protection
- Robust clevis and frame with fewer weld joints in tension
- High-strength steel fabricated support frame with massive 152.3 mm (6.0 in) thick steel legs
- Oversized boom pivot bores featuring hardened steel pins and replaceable bushings
- High-strength steel drums featuring 50.8 mm (2.0 in) thick walls with maximum bit tip standoff
- 965 mm (38 in) conveyor provides higher throughput
- Machine geometry for improved performance
- Dual 110-hp motors provide precise torque control and traction speeds up to 85 feet per minute, controlled by VFD Technology
- Next generation hydraulic system featuring fewer components and increased component life – pressure and flow on demand
- Bi-directional scrubber discharge integral to the main frame
- Automatic conveyor chain tensioner maintains proper chain tension in all conveyor positions, extending chain life
- Latest evolution machine control system with new larger transmitter
- Wethead compatible

### Unique Features

- Cutter heads – Highest power in class, two separate 205 kW (275 hp) motors
- Robust frame – largest pin and bushing diameters in its class
- Mass – one-piece high-strength frame
- Control systems – Hydraulics & Variable Frequency Drives provide enhanced machine control and protection
- Machine geometry – facilitates crosscut turning and maneuverability
- Ease of maintenance – independent cutter heads, traction, control systems and wethead technology
- Diagnostics – located for easy access



### Cat CM235/235T Continuous Miners

| Model | Cutting Drum Diameter          | Mining Range                    | Weight                   | Cutting Head Power       | Total Power      |
|-------|--------------------------------|---------------------------------|--------------------------|--------------------------|------------------|
| 235   | 863 - 965 mm<br>34 - 38 in     | 863 - 3 251 mm<br>34 -128 in    | 61 tonnes<br>135,000 lbs | 2 x 205 kW<br>2 x 275 hp | 720 kW<br>965 hp |
| 235T  | 1 016 - 1 117 mm<br>40 - 44 in | 1 117 - 3 327 mm<br>44 - 131 in |                          |                          |                  |

| Model        | Max Height             | Max discharge Height  | Face to Bumper         | Face to Tail:           | Zero Cut Height                                   |
|--------------|------------------------|-----------------------|------------------------|-------------------------|---|
| 235/<br>235T | 3 251 mm<br>10 ft 8 in | 2 159 mm<br>7 ft 1 in | 8 128 mm<br>26 ft 8 in | 11 023 mm<br>36 ft 2 in | 863-965 mm / 1 067-1 168mm<br>34-38 in / 42-46 in |

# Continuous Miners – CM235

For more complete information on Cat products, dealer services, and industry solutions, visit us on the web at [mining.cat.com](http://mining.cat.com) and [www.cat.com](http://www.cat.com)

© 2011 Caterpillar Inc.  
All rights reserved

AEXQ0613

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

CAT, CATERPILLAR, their respective logos, "Caterpillar Yellow" and the "Power Edge" trade dress, as well as corporate and product identity used herein, are trademarks of Caterpillar and may not be used without permission.

