

# Cat<sup>®</sup> EL1000

## LONGWALL SHEARER

### Specifications

	Machine @ 50 Hz	Machine @ 60 Hz
Seam Range	1.6-3.2 m	63-126 in
Typical Machine Length (drum centers)	14 065 mm	46.16 ft
Installed Power	Up to 1200 kW	Up to 1,897 hp
Available Cutting Power	2 × 500 kW	2 × 800 hp
Cutting Drum Diameter	1400 to 2000 mm	55 to 78 in
Cutting Drum Speed	33.5, 38.8 and 43.8 rpm	40.2, 46.6 and 52.5 rpm
Haulage Control	AC inverter drive	AC inverter drive
Haulage System	2 × 85 kW	2 × 115 hp
Haulage Speed	Up to 29.5 m/min	97 ft/min
Haulage Pull	Up to 690 kN	Up to 77.9 tons
Pump Motor	30 kW	48 hp
Body Height	550 mm	21.6 in
Machine Weight (approximate)	60 tonnes	66 tons
Operating Voltage	3,300V	4,160V
Minimum Pan Width	832 mm	32.7 in

### Ranging Arm

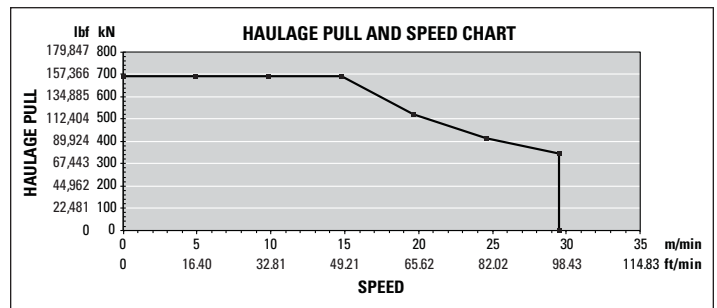
Designed and robustly tested – for longer service life.

#### RA560

- Transmission rating of 500 kW @ 33.5 rpm and above (40 rpm @ 60 Hz)
- Maximum drum diameter of 2000 mm (78 in)
- Choice of drum speeds
- Complete with 32 mm (1.3 in) bore, through shaft PFF/PBF wet cutting
- Square drum hub (440 mm [17.3 in] across flats)
- Integral monitoring transducers
- Quillshaft transmission protection
- A robust cowl drive mechanism is also available on this model
- Available cutter motors – 500 kW @ 50 Hz (810 hp @ 60 Hz)

### Haulage Unit – HU100

Total Machine Pull	690 kN	77.9 tons
Speed at Maximum Pull	14.75 m/min	48.39 ft/min
Maximum Machine Speed	29.50 m/min	96.77 ft/min
Pull at Maximum Speed	345.7 kN	38.9 tons



- Maximum power rating 85 kW (115 hp)
- Transmission reduction of 132.6:1
- Available with Machine Position Encoder
- Available with Machine Parking Brake
- Integral monitoring transducers
- Quillshaft transmission protection
- Online vibration monitoring

### Downdrive – DD100

- Innovative and unique downdrive design
- Transmission rating of 85 kW (115 hp)
- Maximum haulage pull of 690 kN (77.9 tons)
- Fully removable, modular gearbox
- Removable modular top drive wheel assembly
- Downdrive ratio 17T—23T—10T (two wheel configuration)
- Trapping shoe with replaceable wear inserts, safe and easy to replace (unique to Caterpillar)
- Suitable for all current rack type systems

# EL1000 Longwall Shearer

## Powerpack – PP2

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- Fixed displacement pump, with a capacity of 50 L/min (13 gal/min)
- Operating system pressure of 280 bar (4,000 psi)
- Robust hydraulic reservoir of 140 L (37 gal) capacity
- Integral monitoring transducers
- For use with ISO 68 or ISO 100 hydraulic oils
- Available with 6 section valve bank
- This unit has a pump motor rating of 30 kW @ 50 Hz (48 hp @ 60 Hz)

## Mainframe – MF1

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- High structural integrity and absorption of all cutting and haulage forces, providing maximum protection for all major units
- Maximum protection of electrical boxes, providing the highest level of flameproof integrity
- Improved access for maintenance and ease of overhaul and repair
- Versatility of application due to fully modular construction
- A split mainframe is available in case of transportation limitations

## Electrical Control Box – ECB2

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- This flameproof module contains the majority of the shearer electrical control and power distribution components.
- High current carrying capacity of 400 amps and can accommodate trailing cables up to 185 mm<sup>2</sup> (2.9 in<sup>2</sup>).
- All internal chassis can be 'bench built,' tested and stored.
- Box contains various LV circuit breakers which can be reset through the FLP cover, reducing downtime.
- An extremely powerful PMC Evo-S control system with state-of-the-art Ethernet communication and backup functionality, this allows the shearer to be operated even if the overall control system is not functioning.
- This unit also contains cutter motor contactors, circuit breakers, control transformer, current monitoring, HV fuses, earth leakage and a visible disconnect.

## Haulage Transformer Box – HTB2

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- This flameproof module contains the main 253 kVA haulage transformer, power supplies, auxiliary transformer, drive system circuit breaker and one 250 kW (335 hp), 600V AC inverter drive, with integrated regenerative braking.

## Electrical Material

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- This model of shearer is available with headlights, cameras, methane monitoring, end displays and audible alarms.
- All electrical material is designed and certified to IEC standards and also complies with other regional and national standards, such as MSHA, GOST, MA, ATEX and DGMS, as well as Australia's New South Wales and Queensland regulations.

## Hydraulic Material

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- All hose assemblies are to ISO 6805 and proof tested to EN ISO 1402.
- The hoses are assembled to Hose Assembly Standard DIN20066:201-10.
- All hose and hosing is in compliance with guideline MDG 41 and MSHA regulations.

## Water Material

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- All hose assemblies are to ISO 6805 and proof tested to EN ISO 1402.
- The hoses are assembled to Hose Assembly Standard DIN20066:201-10.
- All hose and hosing is in compliance with guideline MDG 41 and MSHA regulations.
- This model of shearer is available with onboard filtration, dust suppression spray bars, shearer clearers and ranging arm spray rings.

## Health Monitoring

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- A comprehensive health monitoring system is available, including oil levels and temperatures, flows, pressures and vibration analysis.

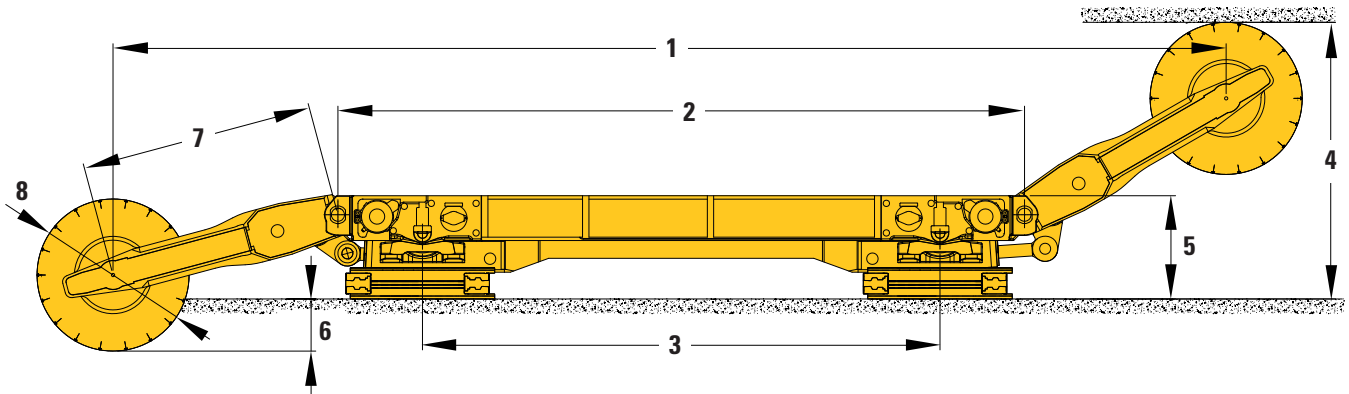
## Machine Automation and Communication

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Industry-leading Automation from the Pioneer of State-based Automation.

- This shearer has a state-of-the-art distributed automation system for the control, monitoring and protection of the shearer. Its modular design allows it to be configured to meet individual control needs, from basic monitoring and protection to advanced automation and data transmission.
- The PMC-S control system with state-of-the-art Ethernet communication and backup functionality allows the shearer to be operated even if the overall control system is not functioning.
- The shearer is equipped with a state-of-the-art industry PC in a flameproof housing with plenty of computing power, allowing flexibility to upgrade to future features such as condition monitoring.
- A Programmable Logic Controller (PLC) takes care of basic machine control tasks, ensuring that coal is produced.
- Unlike competitor systems, the modularity of the longwall system and control allow the longwall to operate in "fault-tolerant" mode, even when there is a problem with the overall automation system.
- In other words, integrated automation does not prevent control via individual PLC's in order to keep production up and running.
- Levels of automation:
  - Zone-based automation "Navigator 1"
  - State-based shearer automation "Navigator 2"
  - Integrated longwall automation with "Navigator 2 + 3"
  - "Longwall Navigator" for improved face alignment and horizon control

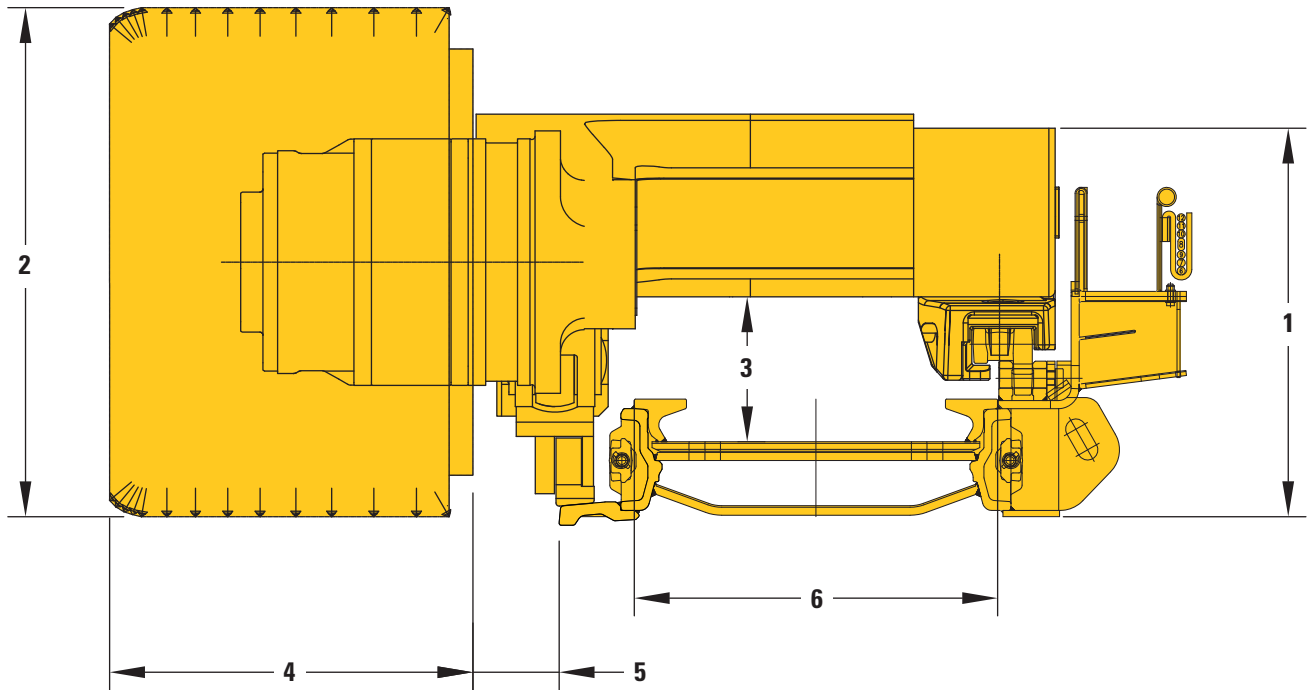
# EL1000 Longwall Shearer



**Dimensions** (All dimensions are approximate.)

1 Distance between Drums with Arms Horizontal	14 065 mm	554 in
2 Distance between Ranging Arm Hinge Points	8435 mm	332 in
3 Distance between Trapping Shoe Centers (typical)	6381 mm	251 in
4 Maximum Cutting Height for Seam (plus)	3200 mm	126 in
5 Height to Top of Machine Main Body (lowest version)	1200 mm	47.2 in
6 Shearer Drum Undercut of Floor (>)	500 mm	20 in
7 Ranging Arm Length (hinge to drum)	2815 mm	110.8 in
8 Diameter of Shearer Cutting Drum	1524 mm	60 in

# EL1000 Longwall Shearer



## Dimensions (All dimensions are approximate.)

1 Machine Height over Main Body (< in lowest version)	1200 mm	47.2 in
2 Ranging Arm Cutting Drum Diameter	1524 mm	60 in
3 Vertical Tunnel Clearance (approximate)	460 mm	18 in
4 Cutting Drum Overall Width	1142 mm	45 in
Width across Picks	1067 mm	42 in
5 Clearance from Drum to AFC Toeplate	271 mm	11 in
6 AFC Pan Width (typical – as shown)	1142 mm	45 in

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